Installation Instruction Manual

MON-920
MON-930
MON-G930-24V
MON-G930
MON-940

Monitoring Systems

Toll Free: +1 (866) 624-8309 ● www.itl-llc.com

itl International Tower Lighting, LLC™

Front Matter

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Limited Warranty and Disclaimer

ITL, LLC guarantees that every MON-9x0/G9x0 monitoring system is free from physical defects of material and workmanship under normal use for one (1) year from the date of purchase. If the product proves defective during this warranty period, please contact ITL, LLC in order to obtain a Return Authorization Number, RMA.

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Please send any comments regarding the manual to support_doc@itl-llc.com.

Safety Warning

This equipment uses lethal voltages which can cause serious injury and/or death. Do not attempt to service this equipment with line power applied.

Never rely on just one switch to power down a high voltage supply. Measure for voltages using a voltmeter to ensure that power is off and has been completely removed.

Do not wear any jewelry when servicing this equipment. Gold and silver are excellent conductors of electricity.

Battery Warning and Disposal

There is danger of explosion if the included sealed lead-acid battery is replaced incorrectly. Only replace the battery with the same or equivalent type recommended by the battery manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

Do not incinerate, disassemble, or puncture the battery.

For questions or details, please contact The Battery *Council International at (312) 664-6610*, or your local waste agency.

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Introduction

Congratulations, and thank you for choosing an ITL monitoring system.

We trust that ITL's reputation for technical excellence, experience in product development, commitment to our customers and testing will ensure your complete satisfaction.

You have chosen one of the most technologically innovative monitoring systems available on the market today. This product is the result of many years of engineering with extensive input from field service personnel.

This manual covers the MON-0920-LAN wired Ethernet based monitoring system, MON-930 wireless modem based monitoring system, MON-G930 wireless modem based monitoring system, and the MON-940 satellite monitoring system.

Please take the time to read and familiarize yourself with this manual. It contains the information necessary to install, test and troubleshoot the MON-920-LAN, MON-930, MON-G930, and MON-940 series monitoring systems.

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Product Description

ITL's MON-9x0 series systems are designed to provide complete monitoring solutions for all types of tower lighting systems. The monitoring systems' rich set of features are directly applicable to monitor any type or strobe lighting system and red light controller system.

All MON-9x0 controllers communicate with ITL's Microsoft Windows based monitoring software, ITL AutoDialer Pro (ADP), in order to provide either wired or wireless monitoring of remote tower sites from a single central location. The software utilizes included templates for the most common tower lighting configurations for quick and reliable installation.

The MON-9x0 systems have ten dry-contact inputs for monitoring tower lighting system's alarm and status relays as well as door switches, generators and other equipment suitable for dry-contact monitoring. The tower lighting system's photocell is monitored and may be over-ridden remotely. Both resistive and 120VAC powered photocells are supported. The MON-9x0 systems are pre-cabled for up to five dry-contact inputs and battery backup is included as a standard feature.

The MON-920-LAN is a wired Ethernet based monitoring system and is intended to directly connect to a customer's network switch.

The MON-930 makes use of Sierra Wireless Raven and Raven XT Series type modems to provide wireless communication with carriers such as Sprint, Verizon and Cingular. Both CDMA and GPRS versions are available based on the customer's requirement and available coverage.

The MON-G930 makes use of Sierra Wireless Raven, Raven XT, Raven X, and GX400 Series type modems to provide wireless communication with carriers such as Sprint, Verizon and Cingular.

The MON-940 by contrast utilizes Stratos' pole-mounted SDT-5000 modem to provide wireless communication based on fixed satellite technology in areas where cell coverage may not be available. Transmission with this equipment is currently limited to North America.

Typical wireless applications include the use a secure software tunnel provided by a third party for communication between the MON-9x0 equipment and central computer running ADP. Based on the customer's requirement and number of sites to be monitored ADP is available in three editions, Lite, Standard and Enterprise. For more details on ADP please refer directly to the ADP's user's manual.

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Specifications

Environment

Temperature	-40ºC to +55ºC
Humidity	less than 95% relative humidity (non-condensing)

Mechanical

Enclosure

Dimension	Height:	13.56” (344mm)
	Width:	11.43” (291mm)
	Depth:	5.21” (132mm)
Weight		10 lbs (4.5Kg) max

SDT-5000

Dimension	Height:	13.00” (330mm)
	Width:	8.00” (203mm)
	Depth:	2.50” (63.5mm)
Weight		9 lbs (4.08Kg) max

Electrical

Models: MON-9x0-000
MON-G930-000

Input Power	120/240VAC at 60Hz, 12VA (max.)
Suppression	45 Joule, 275V, Input Power, Photocell
	23 Joule, 275V, Dry Contact Inputs
	23 Joule, 275V, Relay Outputs

Models: MON-G930-24V

Input Power	24VDC
Suppression	23 Joule, 275V, Dry Contact Inputs
	23 Joule, 275V, Relay Outputs

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Communication Module

MON-920-LAN

Lantronix	XPort XP100100-03R

MON-930

Sierra Wireless	Raven Series Raven XT Series

MON-G930

Sierra Wireless	Raven Series Raven XT Series Raven X Series GX400 Series

MON-940

Stratos	SDT-5000 / SDX-1100

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Installation

The following section describes how to install the MON-9x0 series monitoring system. Based on the type of system you are going to install please refer to the appropriate wiring diagram in section *Wiring Diagrams.*

Unpacking your Monitoring System

Please examine the shipping containers and their content thoroughly upon receipt and report any potential shipping damage to the carrier.

Tools for Installation

The following tools are suggested for mounting of the ITL monitoring system and satellite.

- Digital multi-meter capable of reading 600VAC/DC (Fluke 177 or 179)
- Nut Drivers and Sockets
- #2 Phillips Screwdriver
- 5/16 Flat Head screwdriver
- Crimp Tool
- Needle Nose Pliers

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Quick Installation Guide

The quick start guide shows how to install the MON-9x0 series monitoring systems. The guide provides only basic instructions for more details, refer to this document.

- Remove packaging material
- MON-940 Only: Install Satellite modem as detailed below
- Determine make of existing tower lighting controller and select appropriate installation diagram from this manual
- Connect MON-9x0 to tower lighting controller to be monitored using supplied harness
- Apply power to unit
- All input LEDs should be on solid or blinking
- Use AutoDialer Pro from central monitoring facility to properly configure the MON-9x0 based on existing lighting controller

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Mounting Enclosure Panel

The MON-9x0 should to be mounted to a properly grounded H-frame or a structure which provides a direct low impedance connection to earth ground.

The mounting cannot obstruct access to the monitoring system's internal components for the purpose of installing and maintaining the equipment. The following diagrams detail the mounting dimensions and clearance for proper access.

Mounting Details for the Enclosure Panel

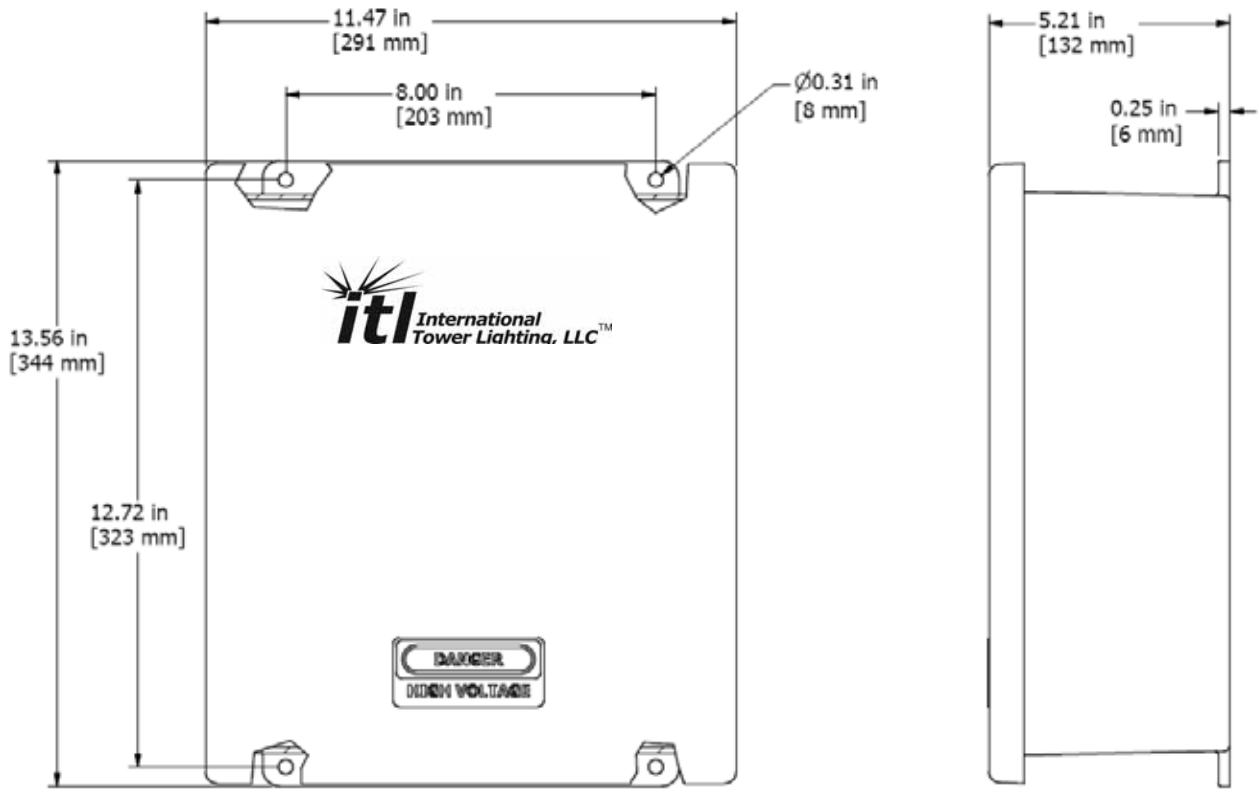

Figure 1: Mounting Details and Dimensions of Enclosure Panel

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Circuit Boards

The following sections' details the MON-920-LAN, MON-930, MON-G930, and MON-940 internal circuit board assemblies.

1. ITL-0920-LAN Circuit Board Assembly

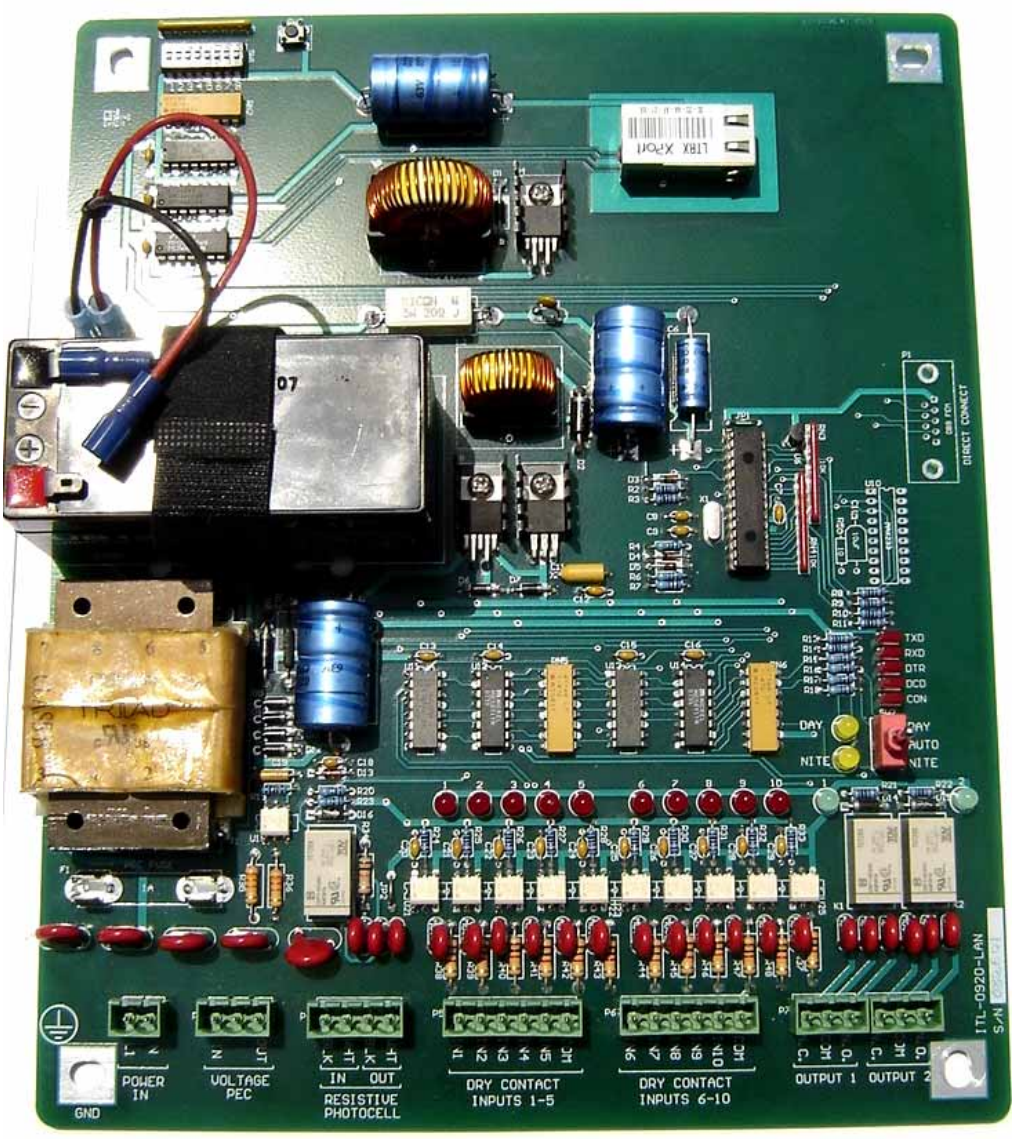

Figure 2: ITL-0920-LAN Board

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A. Ethernet Connection

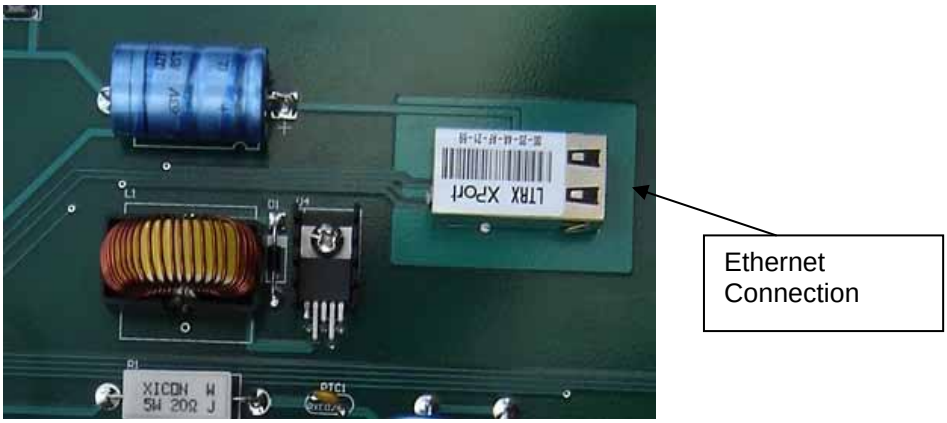

Figure 3: ITL-0920 Ethernet Connection

B. Battery connection

Observe polarity when connecting and disconnecting the battery. Note all battery warnings in the *Safety Warning* section.

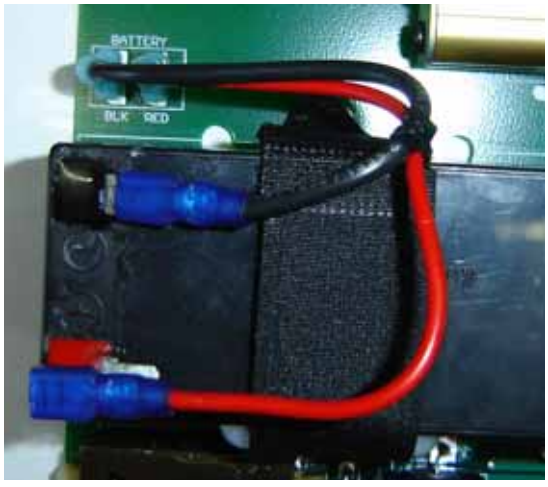

Figure 4: ITL-0920 Battery Connection

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2. ITL-0930-000 Circuit Board Assembly

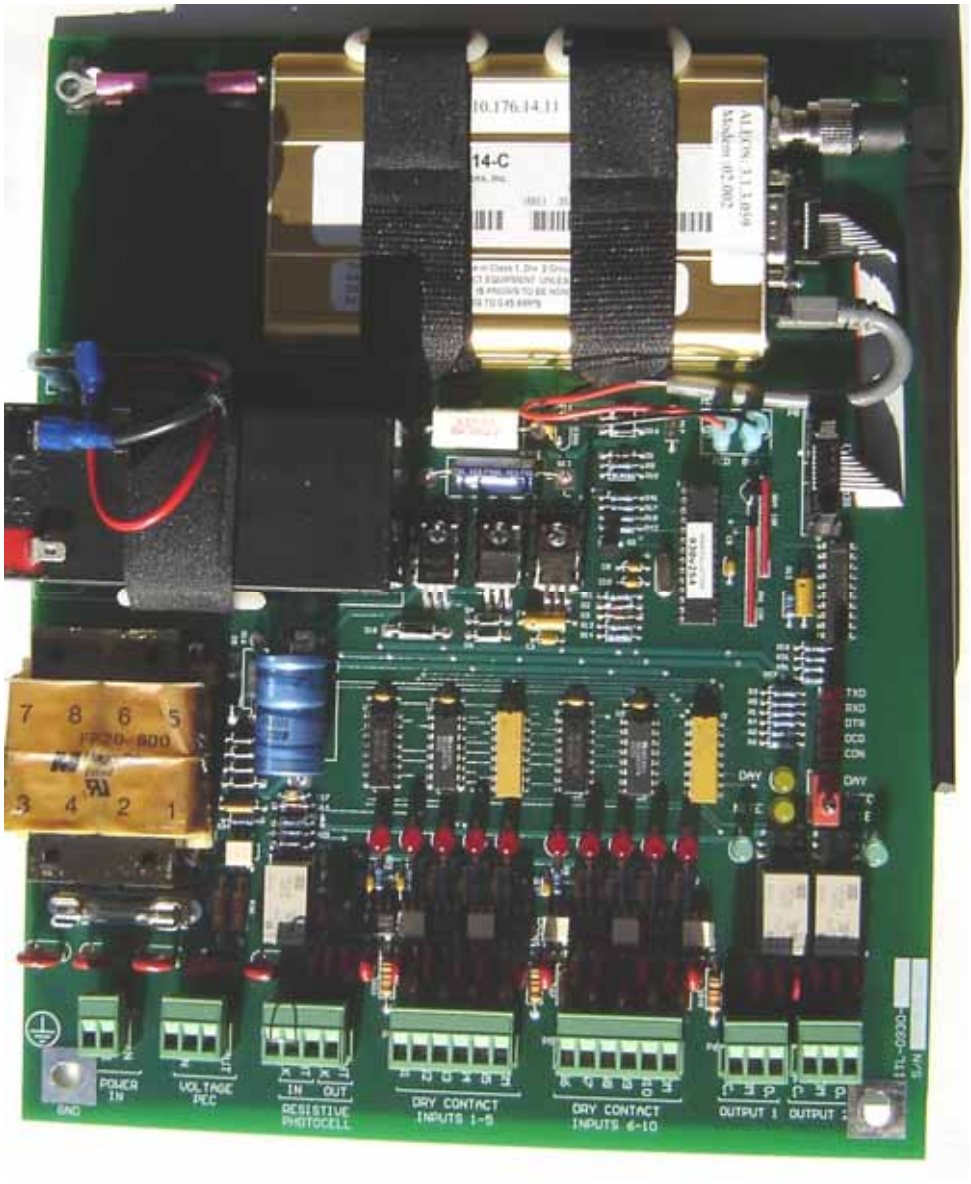

Figure 5: ITL-0930-000 Board

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A. Airlink Modem Connection

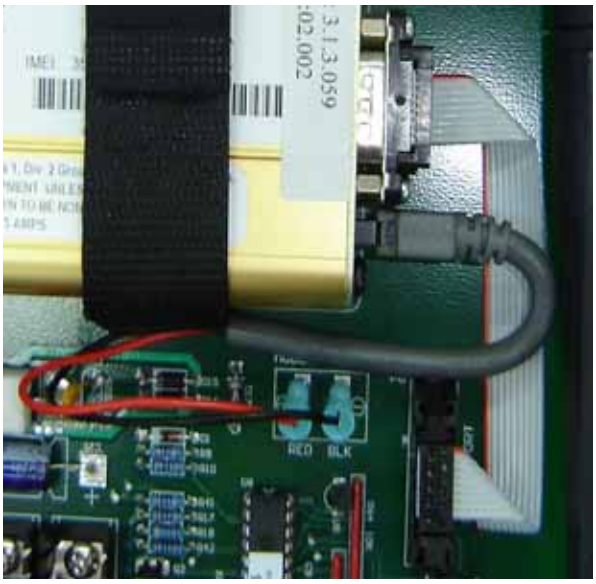

Figure 6: ITL-0930 Wireless Modem Connection

B. Battery connection

Observe polarity when connecting and disconnecting the battery. Note all battery warnings in the *Safety Warning* section.

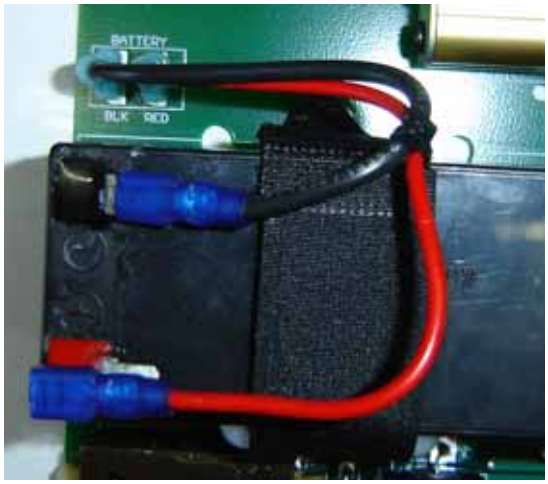

Figure 7: ITL-0930 Battery Connection

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3. ITL-G930-000 Circuit Board Assembly

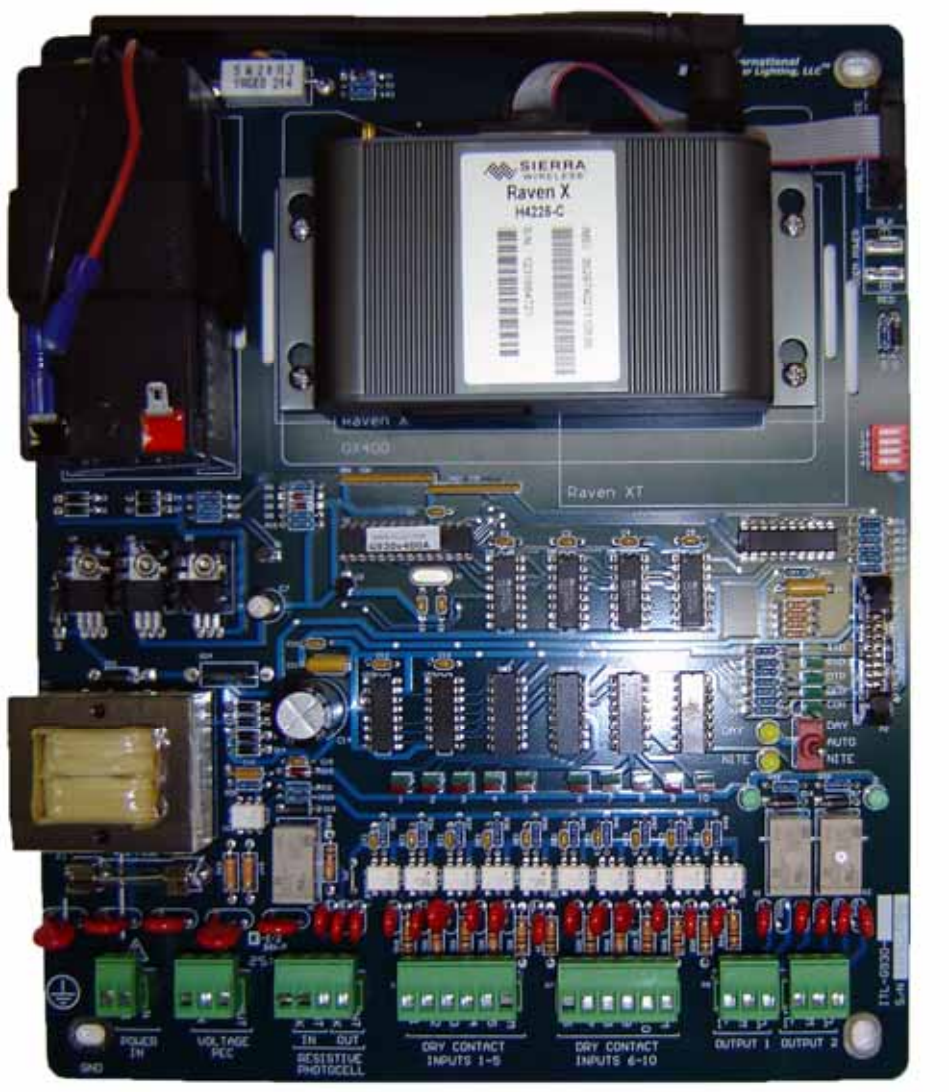

Figure 8: ITL-G930-000 Board

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A. Sierra Wireless Modem Connection

Figure 9: ITL-G930 Wireless Modem Connection

B. Battery connection

Observe polarity when connecting and disconnecting the battery. Note all battery warnings in the *Safety Warning* section.

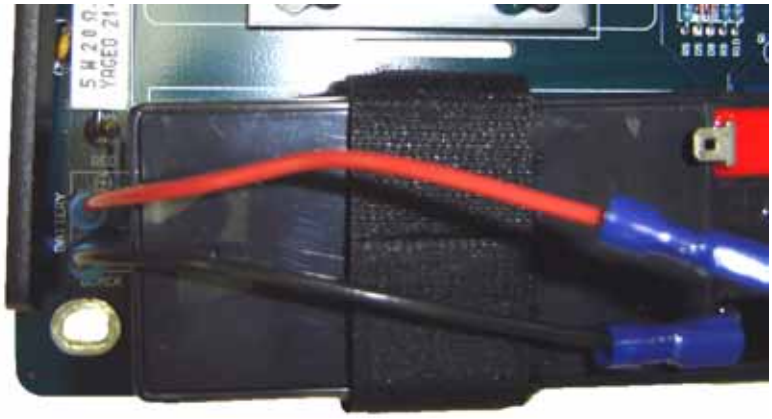

Figure 10: ITL-G930 Battery Connection

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4. ITL-G930-24V Circuit Board Assembly

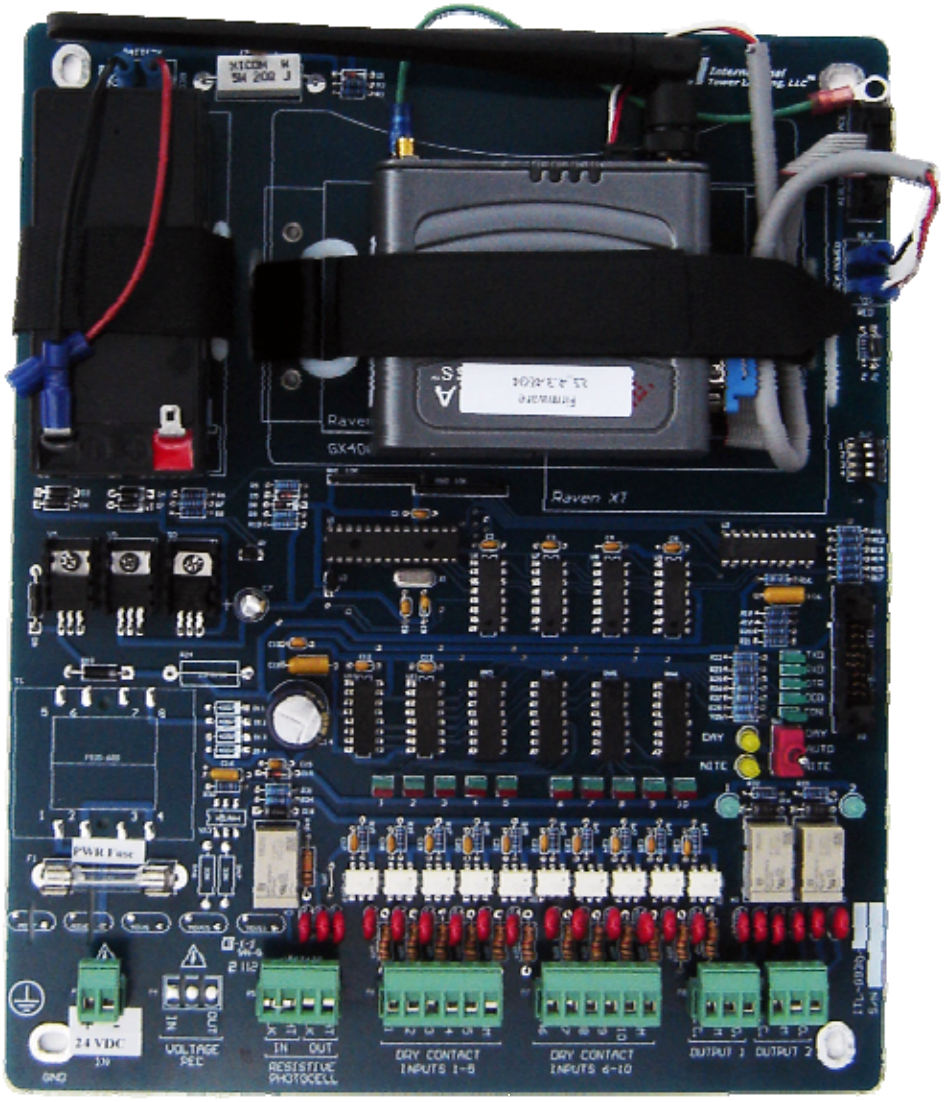

Figure 11: ITL-G930-24V Board

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5. ITL-0940-000 Circuit Board Assembly

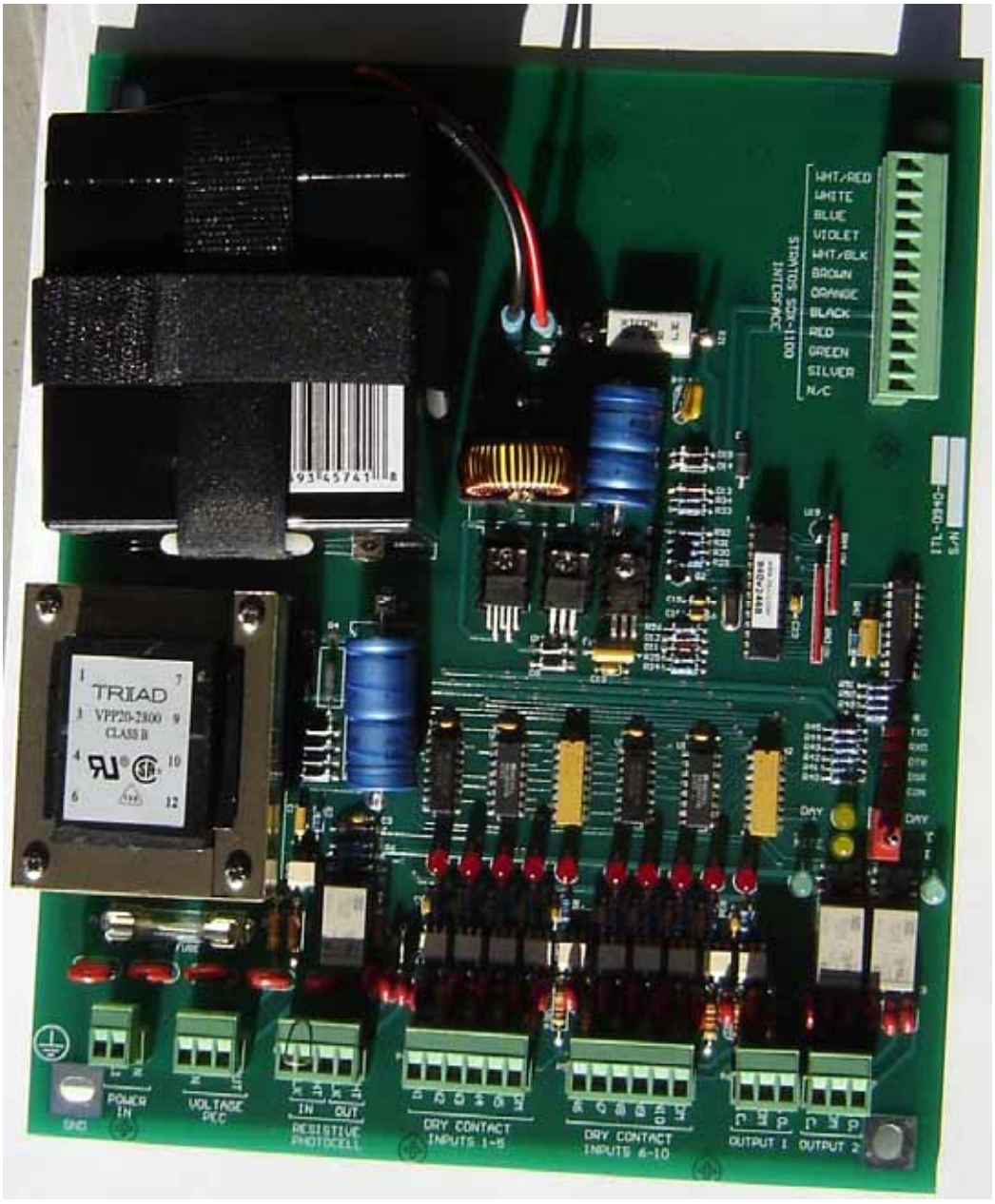

Figure 12: ITL-0940-000 Board

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A. Stratos Satellite Modem Connections

Connect Stratos SDT-5000 to the MON-940 utilizing the existing harness connected to the SDT-5000. Observe harness color coding during installation.

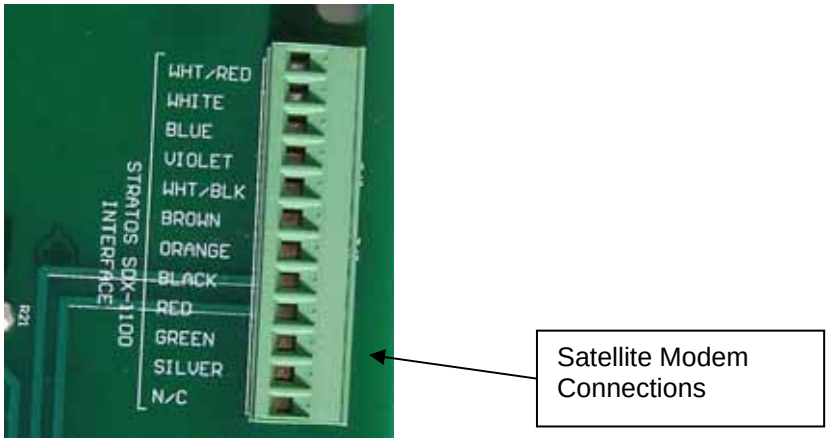

Figure 13: ITL-0940 Satellite Modem Connections

B. Battery Connection

Observe polarity when connecting and disconnecting the battery. Note all battery warnings in the *Safety Warning* section.

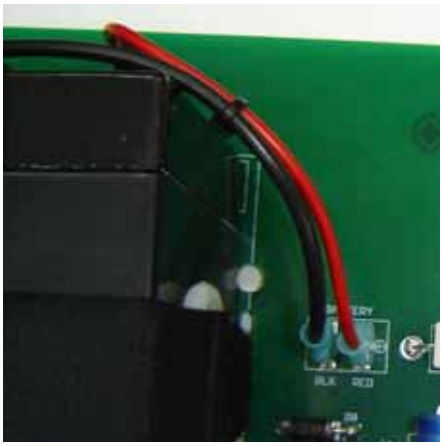

Figure 14: ITL-0940 Battery connection

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6. LED Indicators MON-920/930/940

A. Communication and Mode

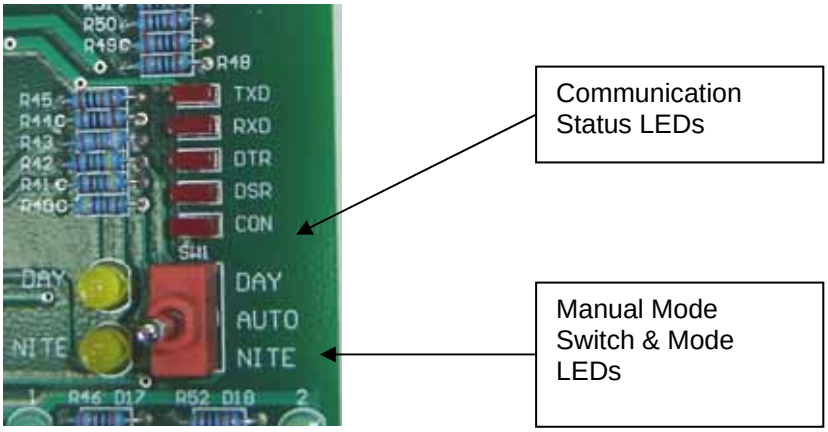

Figure 15: ITL-920/930/940 Communication Status LEDs

B. Inputs and Output Relays

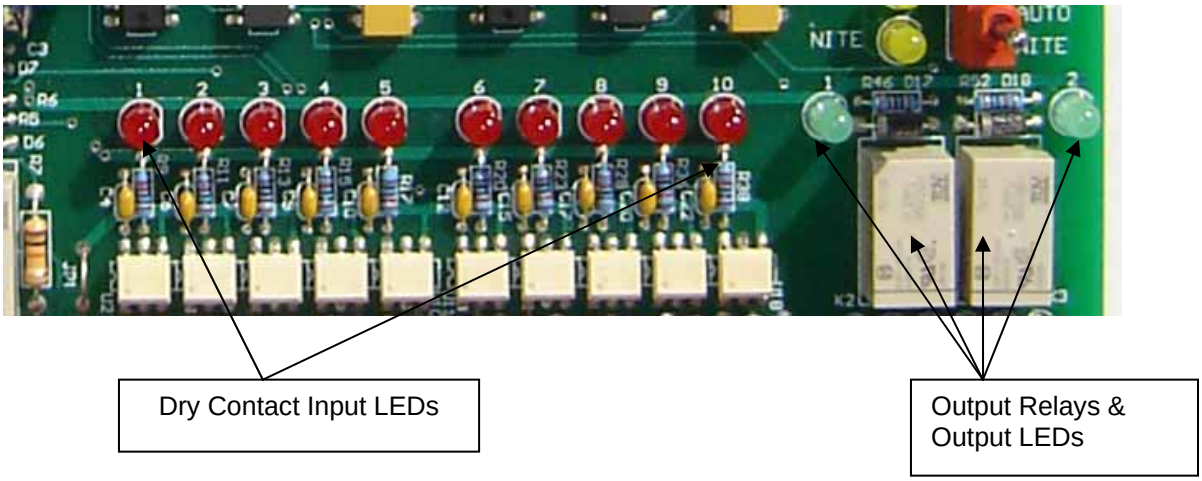

Figure 16: ITL-920/930/940 Dry Contact Input LEDs, Output Relays & LEDs

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C. Indicator Function

Indicator Lights	
Description	**Function**
INPUTS 1-10	Flashing – Alarm Steady – Status Input Active Off – No Alarm / Status Input Not Active
OUTPUTS 1 & 2	On when output relay energized
DAY MODE	Steady – Day mode operation via photoelectric cell. Flashing – Day mode operation via remote over-ride or manual mode switch.
NITE MODE	Steady – Night mode operation via photoelectric cell. Flashing – Night mode operation via remote over-ride or manual mode switch.
TXD	On when the MON-920/930/940 transmits data.
RXD	On when the MON-920/930/940 receives data.
DTR	Status of Data Terminal Ready Modem Signal
DSR	Status of Data Set Ready Modem Signal
CON	On when the MON-920/930/940 establishes a communication connection.

Figure 17: ITL-920/930/940 Indicator Lights Description

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7. LED Indicators MON-G930

A. Communication and Mode

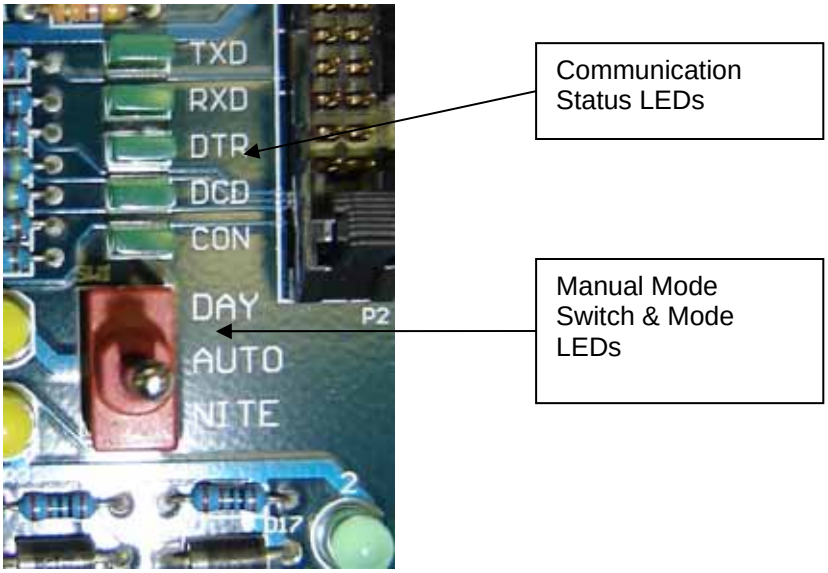

Figure 18: ITL-G930 Communication Status LEDs

B. Inputs and Output Relays

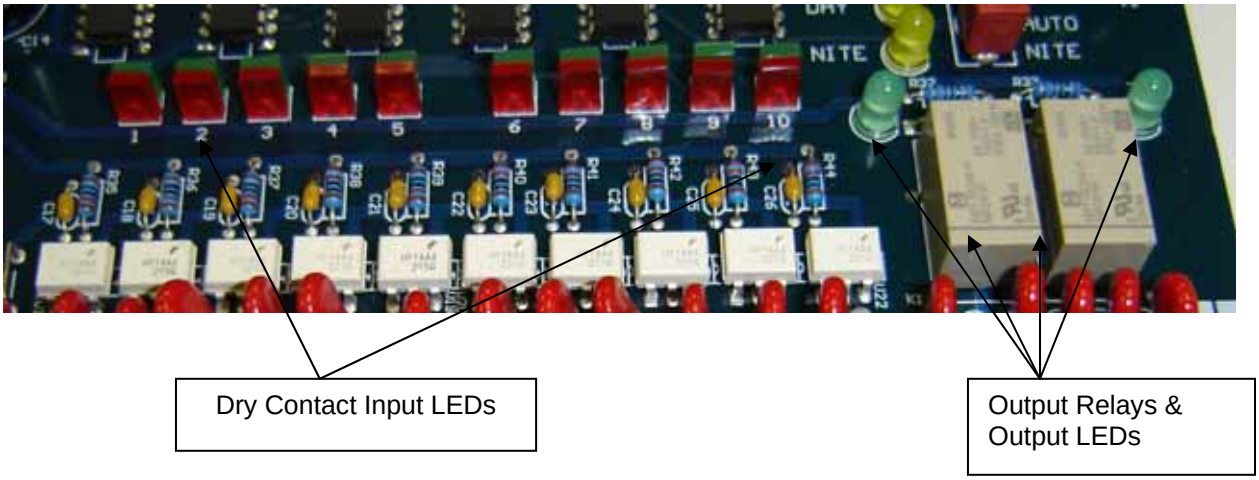

Figure 19: ITL-9x0 Dry Contact Input LEDs, Output Relays & LEDs

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C. Indicator Function

Indicator Lights	
Description	**Function**
INPUTS 1-10 GREEN LEDs	Flashing – Input Active and Not in Alarm Steady – Status Input Active Off – Input Not Active
INPUTS 1-10 RED LEDs	Flashing – Alarm Off – No Alarm
OUTPUTS 1 & 2	On when output relay energized
DAY MODE	Steady – Day mode operation via photoelectric cell. Flashing – Day mode operation via remote over-ride or manual mode switch.
NITE MODE	Steady – Night mode operation via photoelectric cell. Flashing – Night mode operation via remote over-ride or manual mode switch.
TXD	On when the MON-G930 transmits data.
RXD	On when the MON-G930 receives data.
DTR	Status of Data Terminal Ready Modem Signal
DSR	Status of Data Set Ready Modem Signal
CON	On when the MON-G930 establishes a communication connection.

Figure 20: ITL-G930 Indicator Lights Description

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8. Input Connections

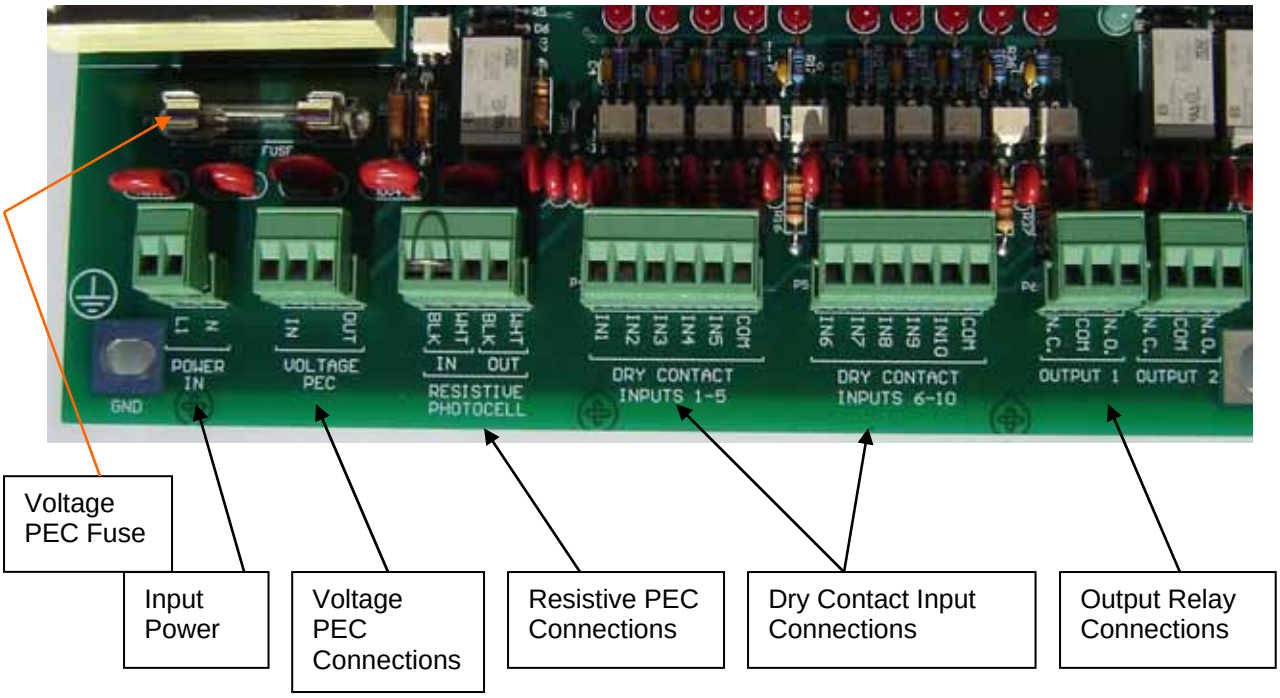

Figure 21: ITL-9x0 Connections

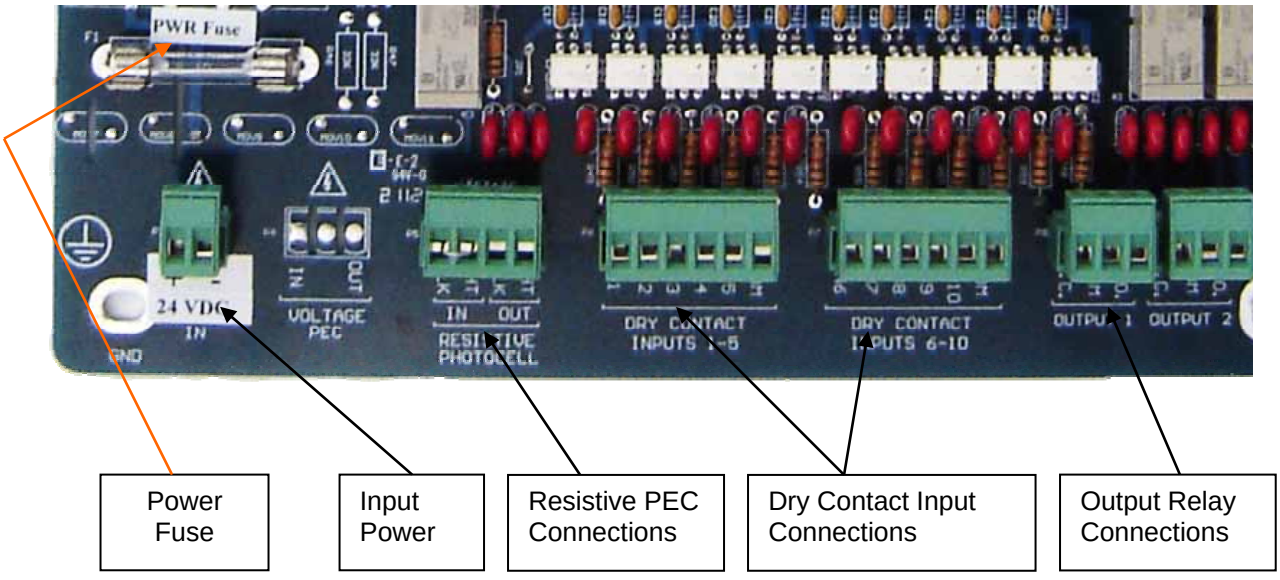

Figure 22: ITL-G930-24V Connections

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MON-920-LAN Setup

The MON-0920-LAN utilizes Lantronix' embedded Ethernet module XPort to provide 10/100 auto-sensing Ethernet connectivity in an RJ45 form factor.

In order to communicate with ADP and also not to interfere with other devices on the same network, the module must have a static IP address on your network. The static IP address is particularly necessary to direct the MON-920-LAN to dump alarms into a computer system running a version of ADP.

Any changes to the IP configuration should be made by a system or network administrator.

Unless specifically requested otherwise before shipping the MON-0920-LAN the default Ethernet factory settings are

Client (MON-0920-LAN):

IP Address:	192.168.1.181
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1
Protocol:	UDP
Client/Local UDP Port:	10001

Server (Computer running ADP):

Host/Remote IP Address:	192.168.1.111
Host/Remote UDP Port:	9003

Note that each MON-0920-LAN unit on your network needs to have a unique IP address in order to communicate with ADP. Use the following setup to change the default settings:

- Connect the MON-0920-LAN's Ethernet port to a network hub using a standard Ethernet cable. Alternatively, the unit can be directly connected to a PC using an Ethernet cross over cable.

- Using a web browser type in the Ethernet module's address. No password is required, simply press Enter when the password dialog pops up.

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If your network does not allow browsing for the MON-0920-LAN's default IP address you can use Lantronix' Windows based *DeviceInstaller* software to find the device on your network and change it manually. Below is the web link

http://www.lantronix.com/device-networking/utilities-tools/device-installer.html

Otherwise proceed as outlined below:

Please note that the following screen shots are for reference only and the actual IP address will depend on your network configuration. Also note if asked for username and password click 'OK'

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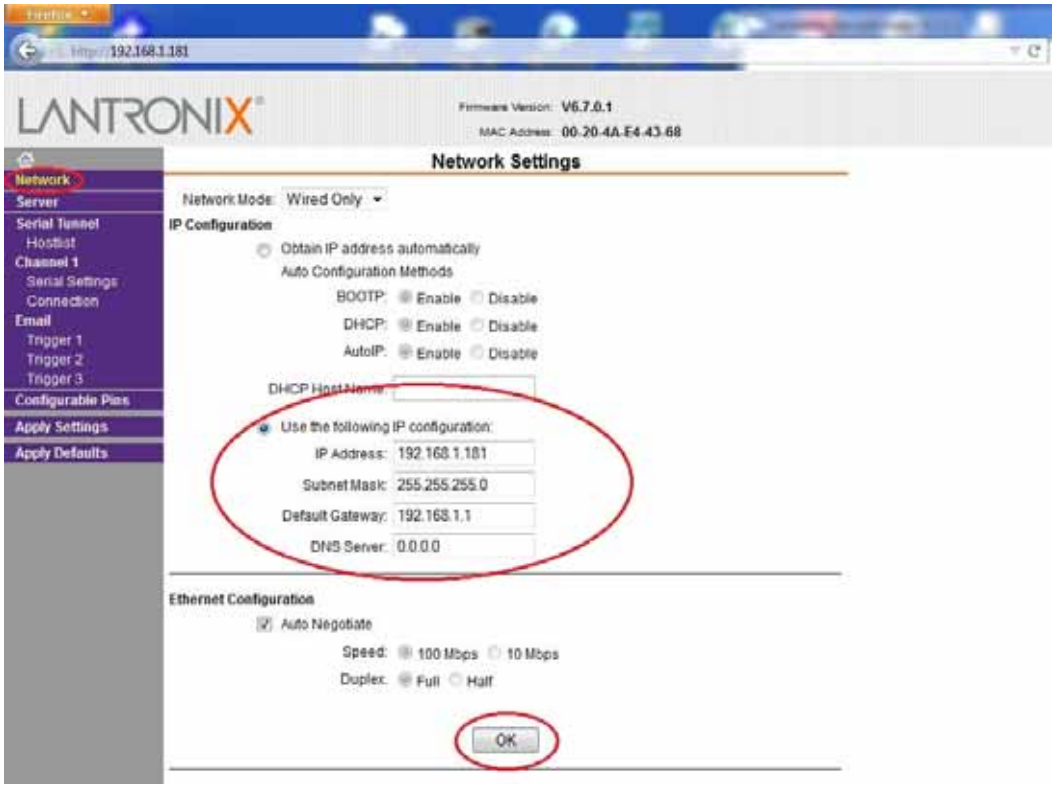
- *Under Network* – change the *IP Configuration* Parameters as required by your network



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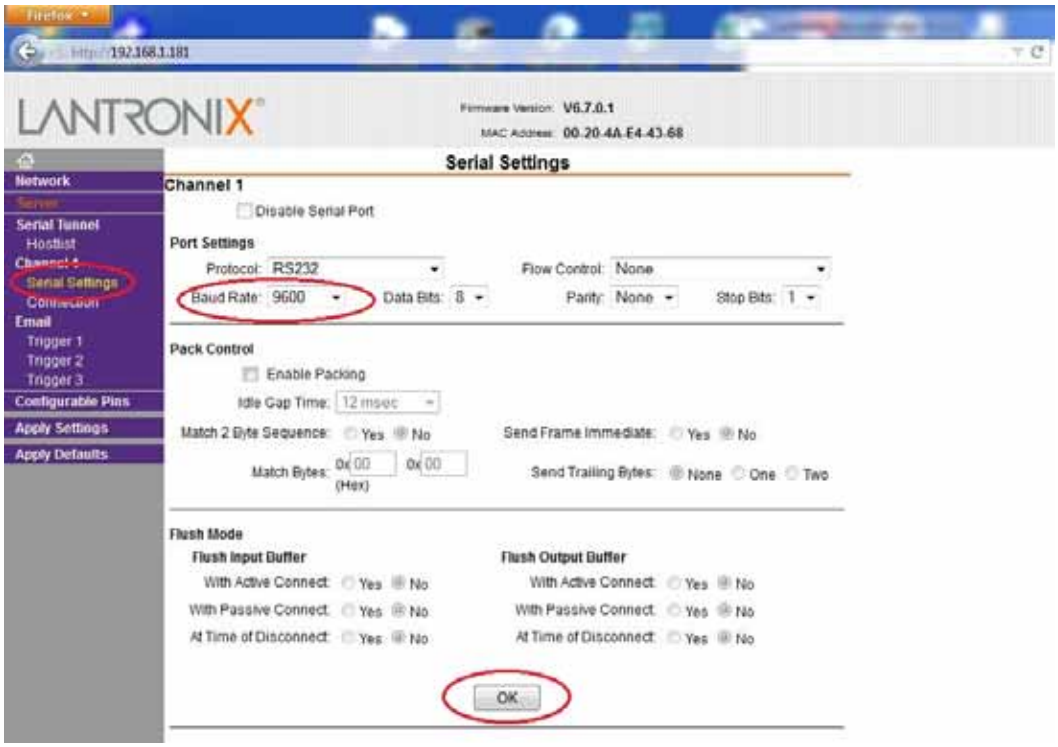
- Under *Serial Settings* – verify *Baud Rate*



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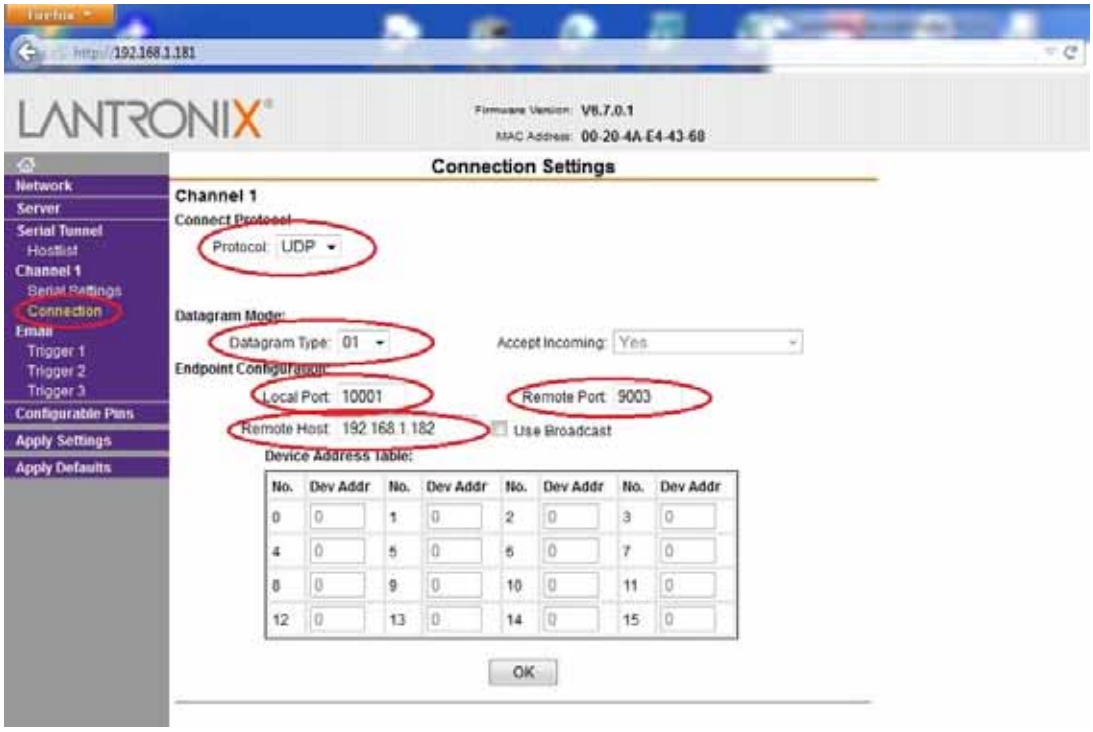
Under *Connection* – verify *Connection Protocol, Local Port, Remote Port*, and *Remote Host* Address



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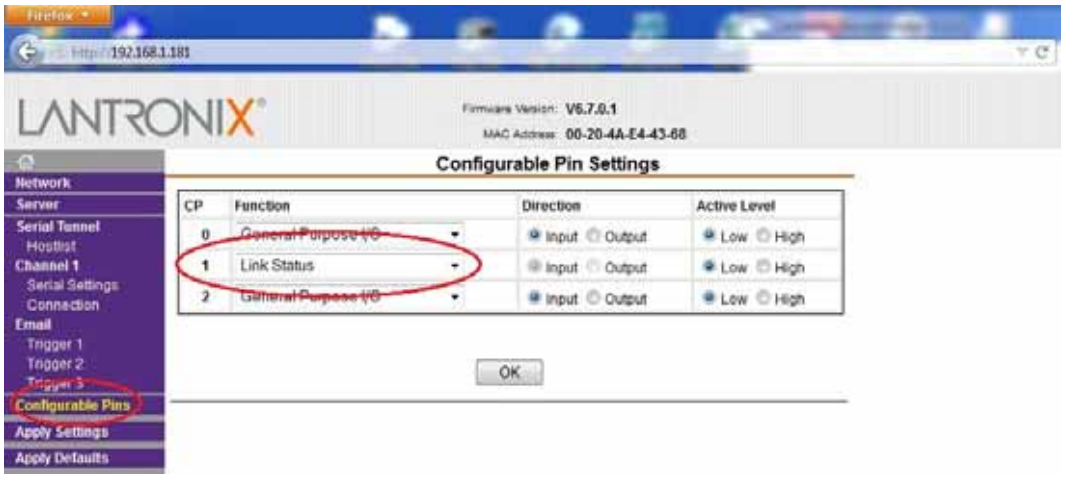
- Under *Configurable Pin Settings* – change Functions to match below



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- Press *Apply Settings* to save the new setup.
- The following message should be displayed confirming successful saving of the new configuration. After this message you MUST REBOOT THE MON-0920-LAN for the new parameters to take effect.
- Note that you if you re-assigned the IP address we will need to reset you browser as well in order to communicate with the MON-0920-LAN's XPort Ethernet module.

- The MON-920-LAN is now ready to communicate with ADP using the new network setup
- Verify that your computer hosting ADP is set such that the firewall will allow UDP messages to Port 9003
- This is required for ADP to receive unsolicited messages from any number of MON-0920 units on the network.

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MON-940 Satellite Modem Installation

The installation of an MON-940 and Satellite Modem requires that some preparation be done before going to the site. It is important to follow recommendations below to achieve the best possible installation. Please review this procedure carefully before going to the site. A laptop computer with Hyper Terminal Software installed (included with Microsoft Windows operating system) and a serial cable is required in order to check the RSSI level at the site.

The distance between the MON-940 and the Satellite Modem should be kept to a minimum. The cable connecting the Satellite Modem to the MON-940 contains low voltage signals. Increased length in this cable increases the Satellite Modem's vulnerability to lightning induced surges. The Satellite Modem requires a clear, unobstructed line-of-site view to the satellite. Trees, buildings, hills, tower legs, and other obstructions must not be in this line-of-site.

1) Before going to the site, determine the correct Azimuth and Elevation for the Satellite Modem. This process is covered in a separate section of this manual.
2) Install the Satellite Modem on a suitable 2" to 2.5" diameter pipe using the clamps and hardware supplied with the modem.
3) Position the Satellite Modem according to the predetermined Azimuth and Elevation.
4) Mount the MON-940 enclosure as close as possible to the Satellite Modem to minimize the length of the connecting cable.
5) Connect the Satellite Modem cable to connector P8 on the MON-940 panel matching wire colors to the colors indicated on the panel legend.
6) Connect the MON-940 Cable 1 black, white, and green wires to supply power the MON-940.
7) Using a laptop computer with Hyper Terminal Software (included with Microsoft Windows) connect to the serial port on the Satellite Modem to determine the RSSI level (signal strength level). This procedure is covered in a separate section of this manual.
8) Contact your Network Operation Center (NOC) and have them contact the site to verify correct communications operation. Report the RSSI level measured to NOC personnel so that it can be recorded for later reference.
9) After proper communications has been verified proceed with the remainder of the electrical connections from the MON-940 to the tower lighting system. Wiring diagrams for various tower lighting systems are included in this manual. Note that other than the Satellite Modem cable, all electrical connections for the MON-940 are identical to MON-930 units.

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Satellite Modem Azimuth & Elevation

Follow this procedure to find the necessary Azimuth & Elevation for the Satellite Modem before traveling to the tower site to install the Satellite modem. You will need a compass of the type shown to correctly align the modem during installation. This type of compass has straight sides and a direction of travel arrow that are needed during installation. Round compasses are much more difficult to use and are not recommended.

You will need to know the Latitude and Longitude of the tower site and you will need internet access for this procedure.

Go to http://www.satsig.net/ssazelm.htm

Click on “Calculator for converting degrees minutes seconds”.

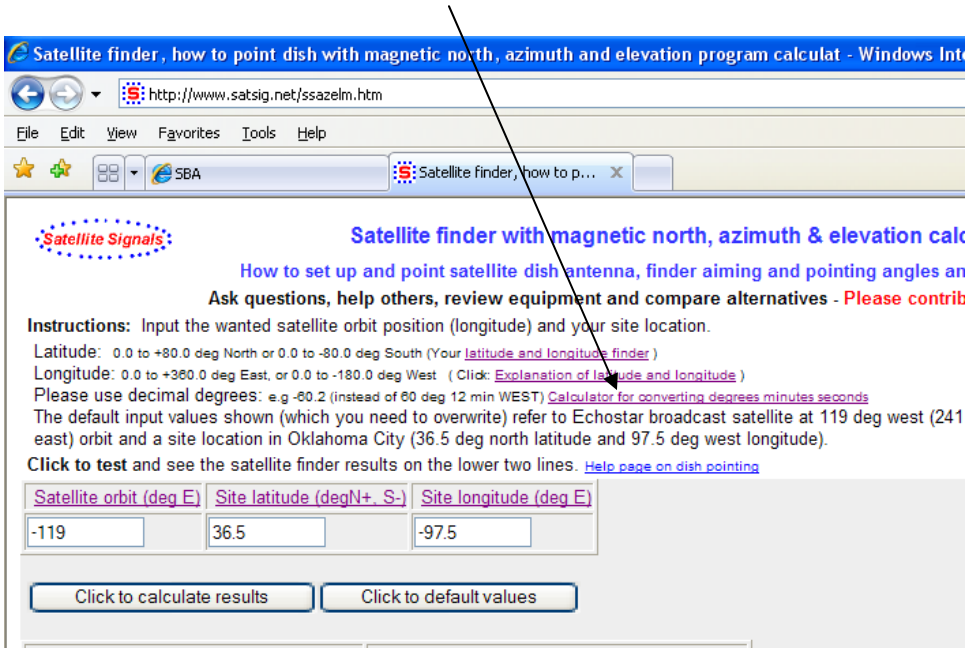
Satellite finder, how to point dish with magnetic north, azimuth and elevation program calculat - Windows Int
http://www.satsig.net/ssazelm.htm
File Edit View Favorites Tools Help
SBA
Satellite finder, how to p...
Satellite Signals
Satellite finder with magnetic north, azimuth & elevation calc
How to set up and point satellite dish antenna, finder aiming and pointing angles an
Ask questions, help others, review equipment and compare alternatives - Please contrib
Instructions: Input the wanted satellite orbit position (longitude) and your site location.
Latitude: 0.0 to +80.0 deg North or 0.0 to -80.0 deg South (Your latitude and longitude finder)
Longitude: 0.0 to +360.0 deg East, or 0.0 to -180.0 deg West (Click: Explanation of latitude and longitude)
Please use decimal degrees: e.g -60.2 (instead of 60 deg 12 min WEST) Calculator for converting degrees minutes seconds
The default input values shown (which you need to overwrite) refer to Echostar broadcast satellite at 119 deg west (241
east) orbit and a site location in Oklahoma City (36.5 deg north latitude and 97.5 deg west longitude).
Click to test and see the satellite finder results on the lower two lines. Help page on dish pointing
Satellite orbit (deg E)
Site latitude (degN+, S-)
Site longitude (deg E)
-119
36.5
-97.5
Click to calculate results
Click to default values

Figure 23: Satellite finder

In this example, our site is FL06467-A, Glades/Shadowood. The latitude and longitude indicated by the SBA site locator are:

Latitude: 26° 22’ 12.5”
Longitude: -80° 12’ 3”

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Enter the degrees, minutes & seconds for the Latitude and click the button to calculate the decimal degrees. Repeat for the Longitude.

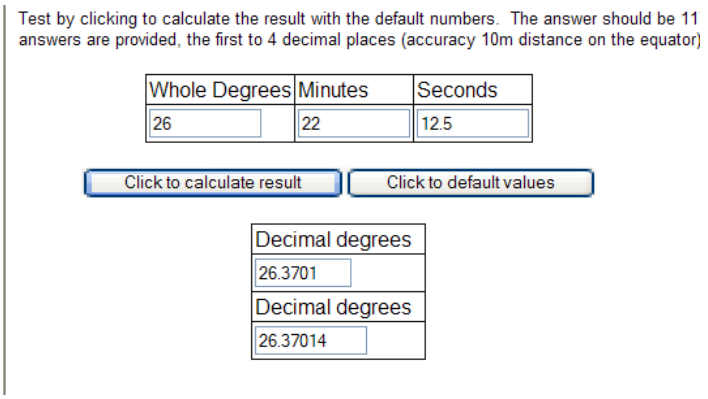

Figure 24: Latitude & Longitude calculator

The decimal degrees Latitude and longitude for Glades/Shadowood are:

Latitude: 26.3701°
Longitude: -80.2008°

Now click the “back” button on your browser to take you back to the screen below and enter the decimal latitude and longitude for the tower site as well as the satellite orbit. The satellite orbit for MSAT used by Stratos is 253.5 degrees.

Satellite orbit: 253.5 (this is constant for the Stratos Satellite)
Site Latitude: 26.3701 (decimal latitude for Glades/Shadowood)
Site Longitude: -80.2008 (decimal longitude for Glades/Shadowood)

Click the button to calculate the results

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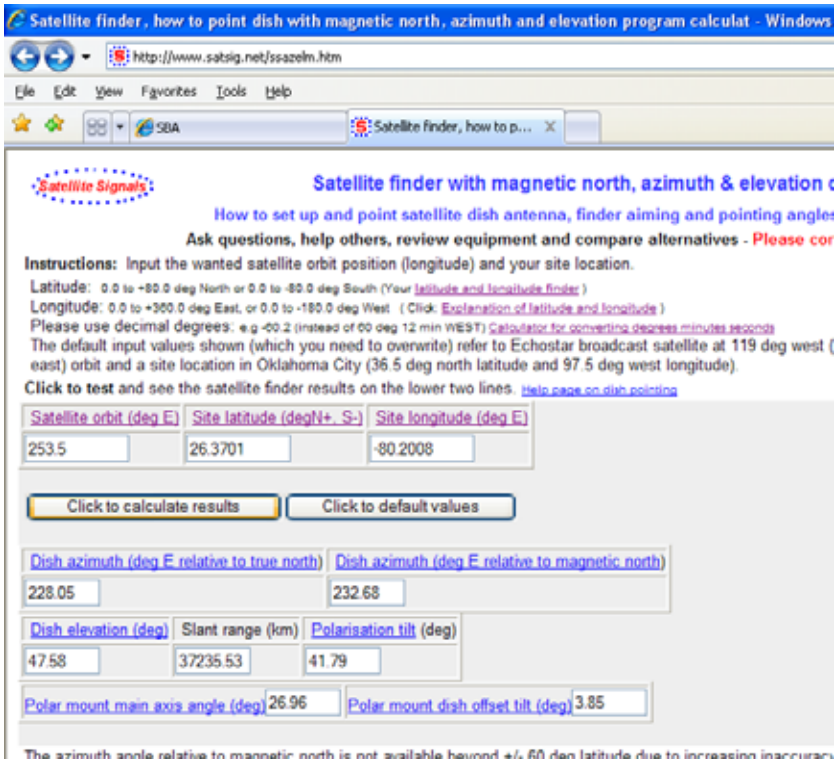
Satellite finder, how to point dish with magnetic north, azimuth and elevation program calculat - Windows
http://www.satsig.net/ssazelm.htm
File Edit View Favorites Tools Help
Satellite finder, how to p...
Satellite Signals
Satellite finder with magnetic north, azimuth & elevation
How to set up and point satellite dish antenna, finder aiming and pointing angles
Ask questions, help others, review equipment and compare alternatives - Please cor
Instructions: Input the wanted satellite orbit position (longitude) and your site location.
Latitude: 0.0 to +80.0 deg North or 0.0 to -80.0 deg South (Your latitude and longitude finder)
Longitude: 0.0 to +360.0 deg East, or 0.0 to -180.0 deg West (Click: Explanation of latitude and longitude)
Please use decimal degrees: e.g -00.2 (instead of 00 deg 12 min WEST) Calculator for converting degrees minutes seconds
The default input values shown (which you need to overwrite) refer to Echostar broadcast satellite at 119 deg west (
east) orbit and a site location in Oklahoma City (36.5 deg north latitude and 97.5 deg west longitude).
Click to test and see the satellite finder results on the lower two lines. Help page on dish pointing
Satellite orbit (deg E)
Site latitude (deg N+, S-)
Site longitude (deg E)
253.5
26.3701
-80.2008
Click to calculate results
Click to default values
Dish azimuth (deg E relative to true north)
Dish azimuth (deg E relative to magnetic north)
228.05
232.68
Dish elevation (deg)
Slant range (km)
Polarisation tilt (deg)
47.58
37235.53
41.79
Polar mount main axis angle (deg)
26.96
Polar mount dish offset tilt (deg)
3.85

Figure 25: Azimuth and Elevation calculation

Since we will be using a compass to align the Satellite Modem, we will use the azimuth relative to magnetic north. So the Azimuth and Elevation needed for a satellite modem installed at Glade/Shadow is:

Azimuth: 232.68° (relative to magnetic north)
Elevation: 47.58°

Adjust the circular housing on your compass until the necessary azimuth (233 degrees for this site) aligns with the direction of travel arrow. Now hold the compass flat in your hand with the direction of travel arrow facing away from you. If the compass is not flat (horizontal) the needle will not be able to move freely.

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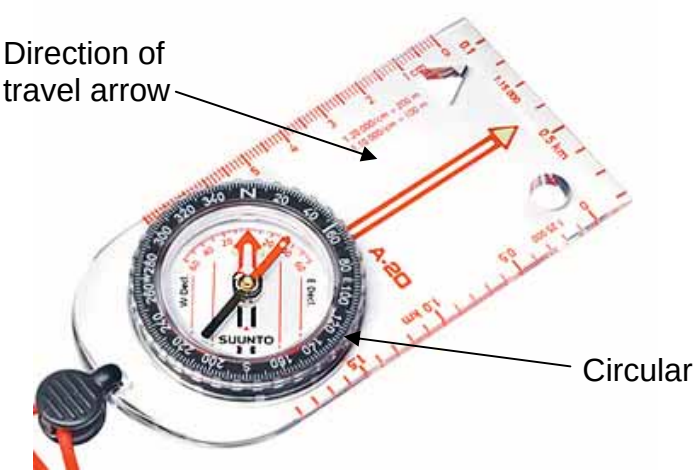

Figure 26: Compass

Now with the compass held flat rotate your body until the red compass needle aligns with the red North arrow on the compass housing. Do not adjust the compass housing; rotate the direction that you are standing. The direction of travel arrow will now be pointing at 233 degrees.

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SDT-5000 Installation

Install the SDT-5000 on a suitable 2” to 2.5” diameter pipe using the clamps and hardware supplied. Align the SDT-5000 to point in the direction determined using the compass.

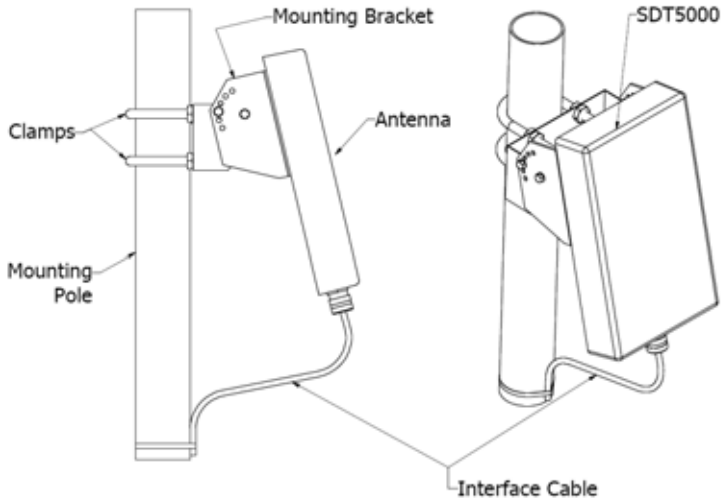

Figure 27: Mounting Details for SDT-5000

The Azimuth is the left-to-right position adjustment. You may have to loosen the mounting brackets slightly to be able to adjust the Satellite Modem to the required Azimuth. When the Azimuth has been set you will need to adjust the Elevation. Elevation adjustment is done by loosening a set screw on the side of the mounting bracket that will enable the Satellite Modem to be adjusted to point vertically higher or lower. The elevation can be measured using a protractor or this can be done in the next section by sweeping the Satellite Modem up and down to find the highest RSSI level.

The SDT-5000 must be mounted as shown with the interface cable facing downward. The SDT-5000 must also have a clear and unobstructed view of the satellite.

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RSSI Signal Strength

You will need a laptop computer with Hyper Terminal Software installed (included with Microsoft Windows operating system) and a serial cable (DB9 male to DB9 female) if you wish to check the RSSI level at the site. Some newer laptop computers do not have serial ports, however, you can purchase a USB-to-serial converter cable that will allow you to connect to the Satellite Modem.

First, you will need to connect the serial cable to the laptop computer. The opposite end of the cable will connect to the Satellite Modem Test Port. The Test Port is located on the bottom edge of the Satellite Modem. It is covered by small metal plate to protect it from the weather. The test port cover is designed to be rotated out the way after removing one screw and loosening the other screw. This cover should be re-installed after this procedure is complete. After removing the cover plate, plug in the serial cable.

Now you will need to run Hyper Terminal on your laptop computer. Go to the Start Menu then navigate as indicated below to start HyperTerminal.

Start -> All Programs -> Accessories -> Communications -> Hyper Terminal

If you are prompted to enter “location information”, you must enter an area code as a minimum. This will not be used so any area code will do.

When the “New Connection” box appears name your connection “MON-940”. When the “Connect to” box appears, you will need to select the serial port you will be using. Typically, this will be COM1. When the “COM1 Properties” box appears select 9600 baud, 8 data bits, no parity, and no flow control as shown below and click “Apply.”

Figure 28: COM Settings

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You should now see the main Hyper Terminal screen. The last setting in Hyper Terminal is access by clicking the “File” menu then selecting “Properties”. Next, click the “Settings” tab at the top of the box and set “Emulation” to VT100. Now click “OK”.

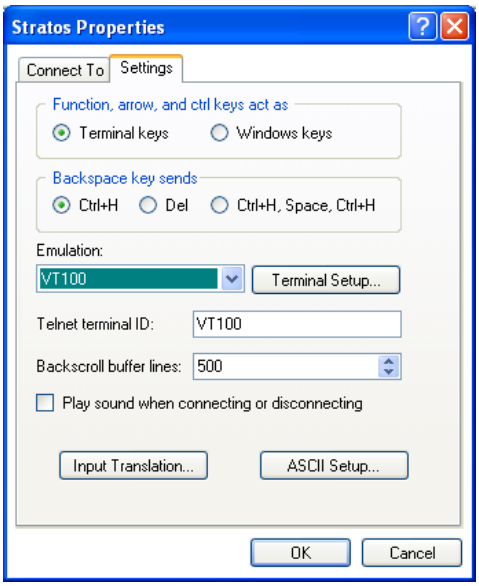

Figure 29: Stratos Properties Setting

If you have not already done so, you can now apply power to the MON-940 which will power-up the Satellite Modem. The Satellite Modem will display many diagnostic messages in Hyper Terminal when it is first powered-up. If the Login screen has not already appeared, press ENTER twice and it should appear. The login screen has selections for Username and Password as shown below.

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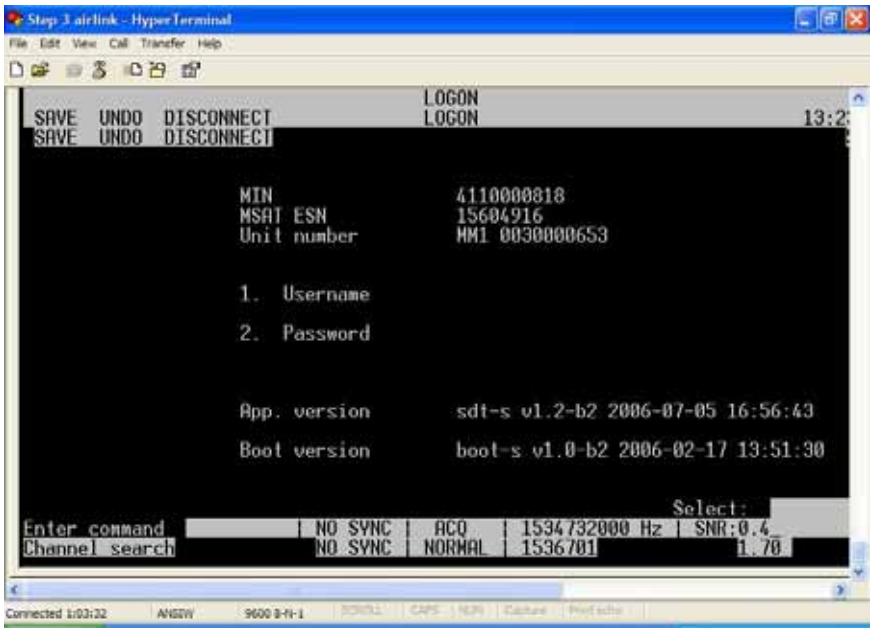
Step 3 airlink - HyperTerminal
File Edit View Call Transfer Help
LOGON
SAVE UNDO DISCONNECT
LOGON
SAVE UNDO DISCONNECT
MIN 4110000818
MSAT ESN 15604916
Unit number MM1 0030000653
1. Username
2. Password
App. version sdt-s v1.2-b2 2006-07-05 16:56:43
Boot version boot-s v1.0-b2 2006-02-17 13:51:30
Select:
Enter command | NO SYNC | ACQ | 1534732000 Hz | SNR:0.4
Channel search NO SYNC | NORMAL | 1536701 1.70
Connected 1:03:22 ANSIW 9600 8-N-1

Figure 30: Logon Username and Password

Typically the Username and password will be one of the combinations shown below.

Username: *VAR*
Password: *var*

or

Username: *USER*
Password: *user*

- Press “1” then ENTER and you will be prompted to enter the username then press ENTER.
- Next, press “2” then ENTER and enter the password and press ENTER.
- Finally, press “S” then ENTER to save this information. Now the Main Menu should appear.

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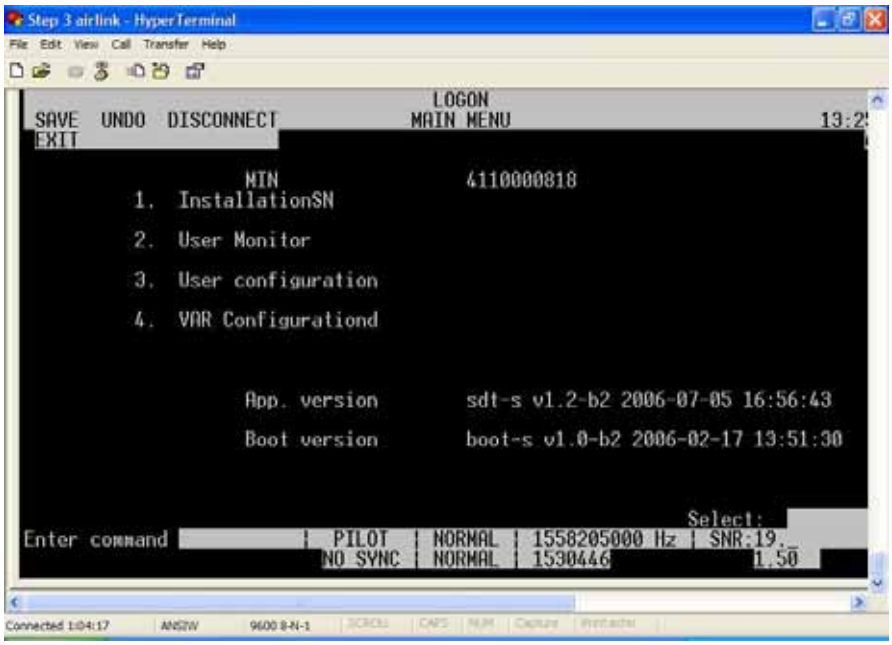
Step 3 airlink - HyperTerminal
File Edit View Call Transfer Help
LOGON
SAVE UNDO DISCONNECT MAIN MENU 13:2
EXIT
MIN 4110000818
1. InstallationSN
2. User Monitor
3. User configuration
4. VAR Configurationd
App. version sdt-s v1.2-b2 2006-07-05 16:56:43
Boot version boot-s v1.0-b2 2006-02-17 13:51:30
Select:
Enter command | PILOT | NORMAL | 1558205000 Hz | SNR:19._
NO SYNC | NORMAL | 1530446 1.50
Connected 1:04:17 ANSIW 9600 8-N-1

Figure 31: Logon Main Menu

From the Main Menu select type “1” and ENTER to select the Installation screen. The Installation Screen will show a bar graph for the RSSI level as shown below. If necessary you can adjust the Azimuth of the Satellite Modem (left to right adjustment) to try to improve the signal strength.

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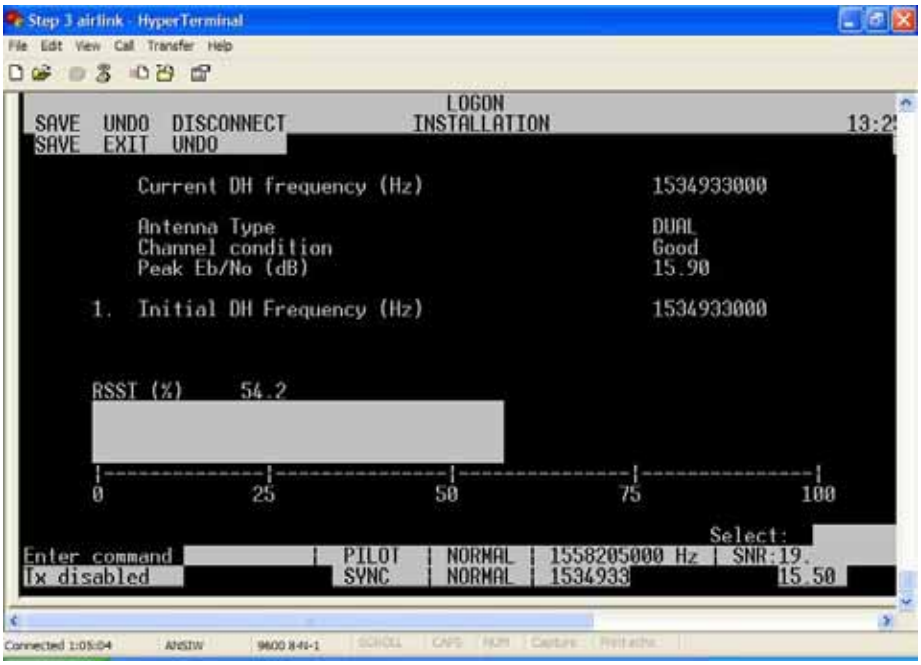
Step 3 airlink - HyperTerminal
File Edit View Call Transfer Help
LOGON
SAVE UNDO DISCONNECT INSTALLATION
SAVE EXIT UNDO
Current DH frequency (Hz) 1534933000
Antenna Type DUAL
Channel condition Good
Peak Eb/No (dB) 15.90
1. Initial DH Frequency (Hz) 1534933000
RSST (%) 54.2
0 25 50 75 100
Select:
Enter command | PILOT | NORMAL | 1558205000 Hz | SNR:19.
Tx disabled | SYNC | NORMAL | 1534933 | 15.50

Figure 32: Logon Installation

NOTE: The Satellite Modem will NOT TRANSMIT while in the Installation Screen.

Be sure to exit from this screen before attempting to communicate with the MON-940

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Installation Diagrams

The following section details various installation diagrams for connecting the MON-9x0 to a wide variety of existing lighting systems. Please refer to the diagram which matches your lighting system at the tower site.

ILS-3400 Wiring Diagram

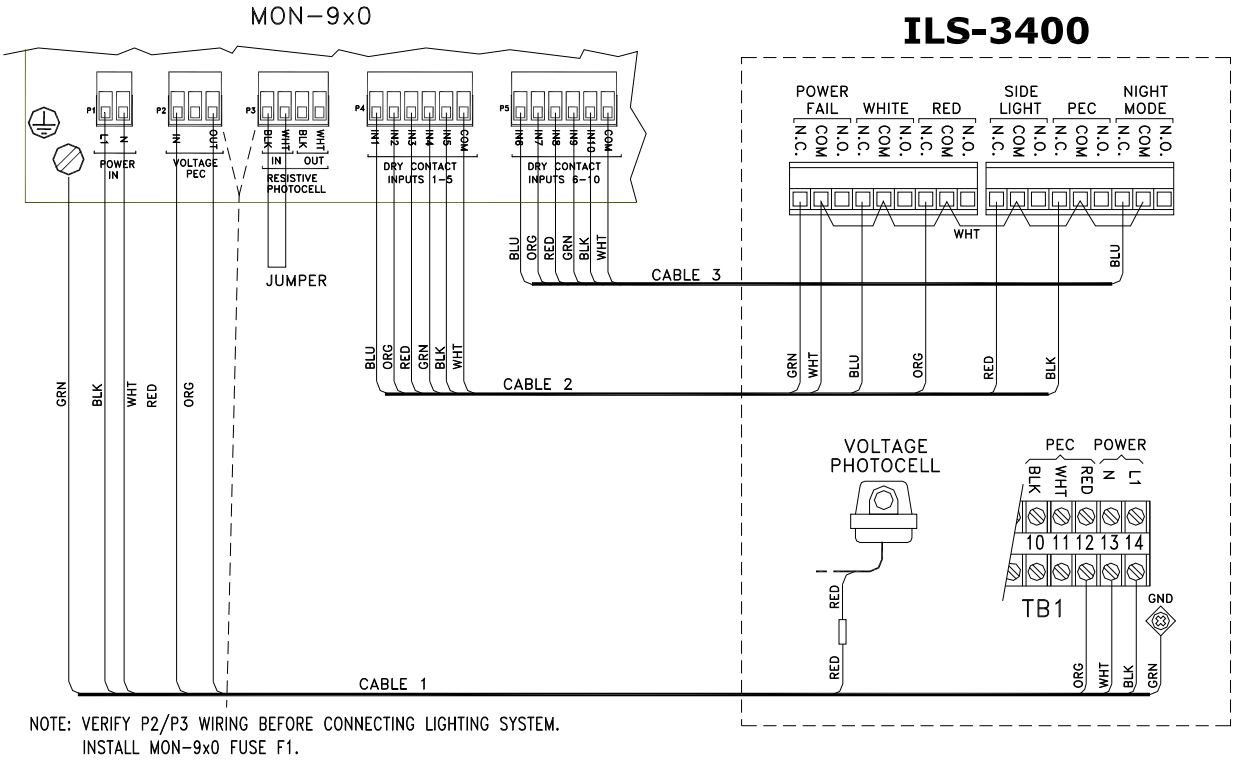

Figure 33: ILS-3400 Wiring Diagram

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ILS-3400 Triple Beacon Wiring Diagram

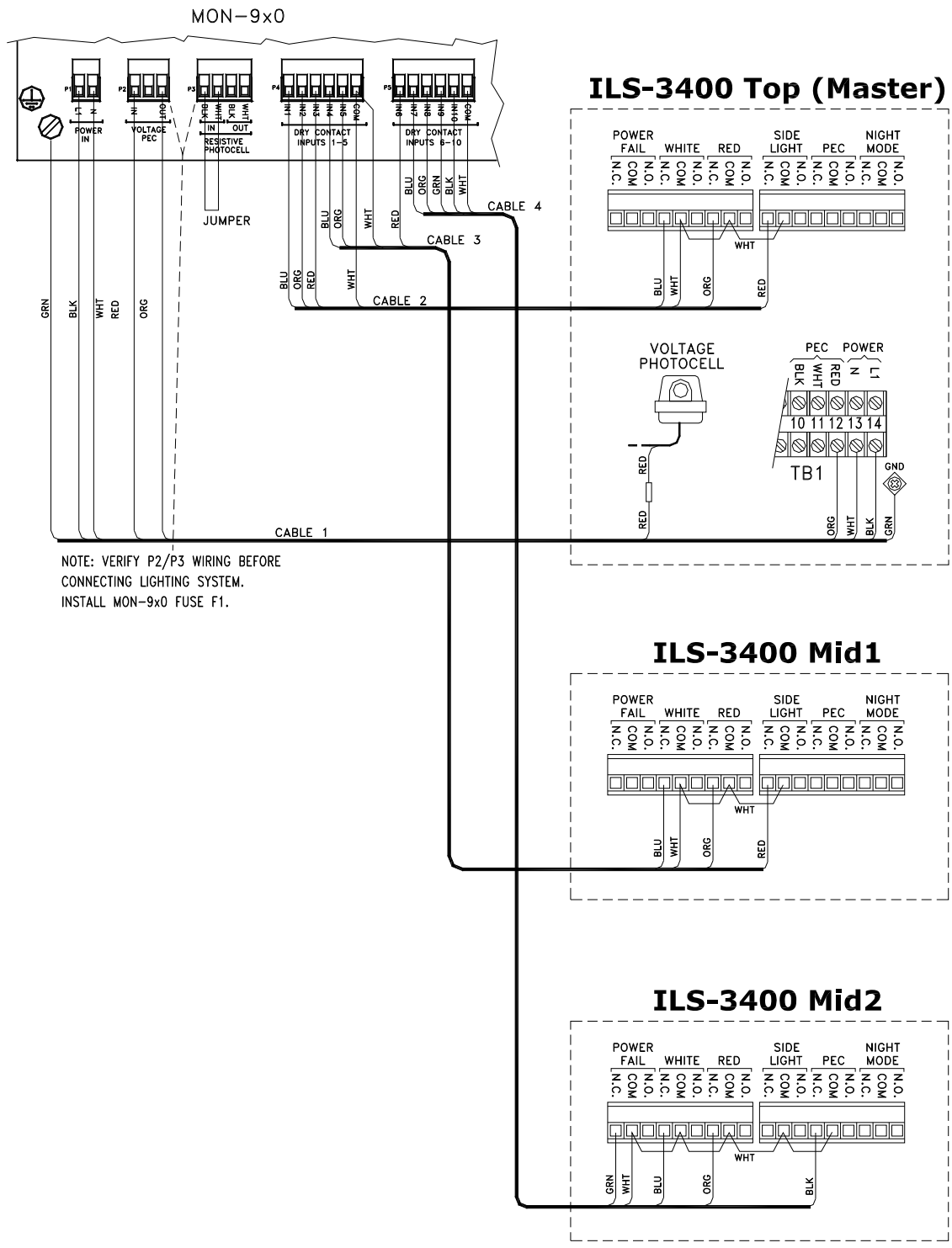

Figure 34: ILS-3400 Triple Beacon Wiring Diagram

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ILS-2400 Wiring Diagram

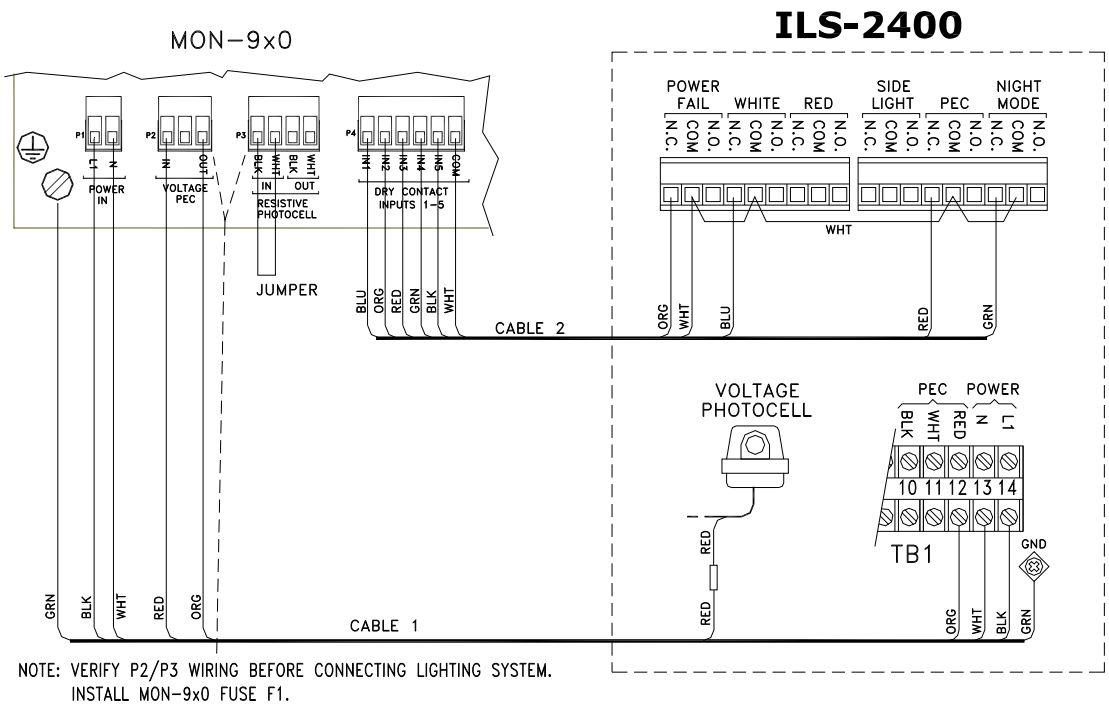

Figure 35: ILS-2400 Wiring Diagram

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ILS-2400 Triple Beacon Wiring Diagram

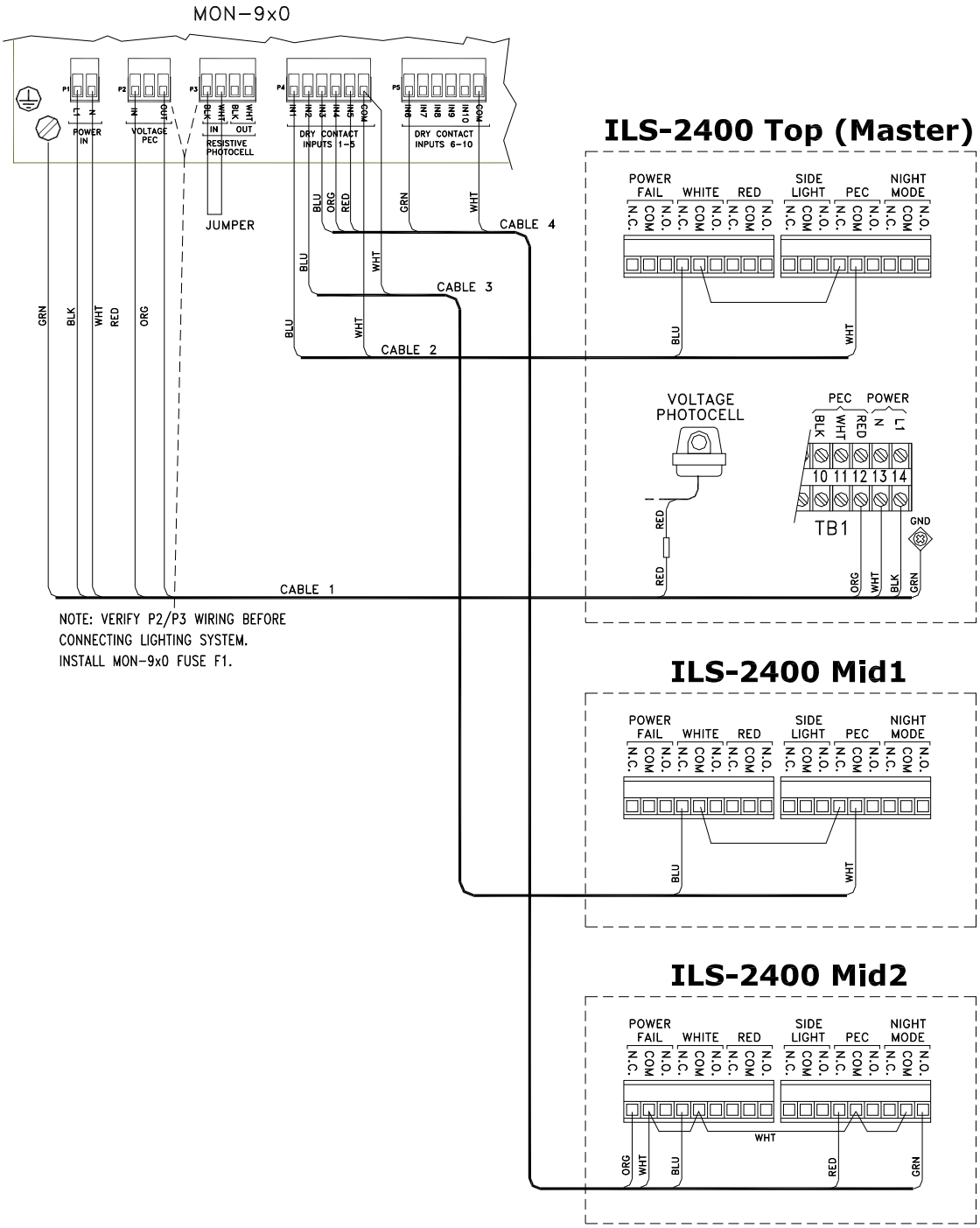

Figure 36: ILS-2400 Triple Beacon Wiring Diagram

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ILS-D1RW Wiring Diagram

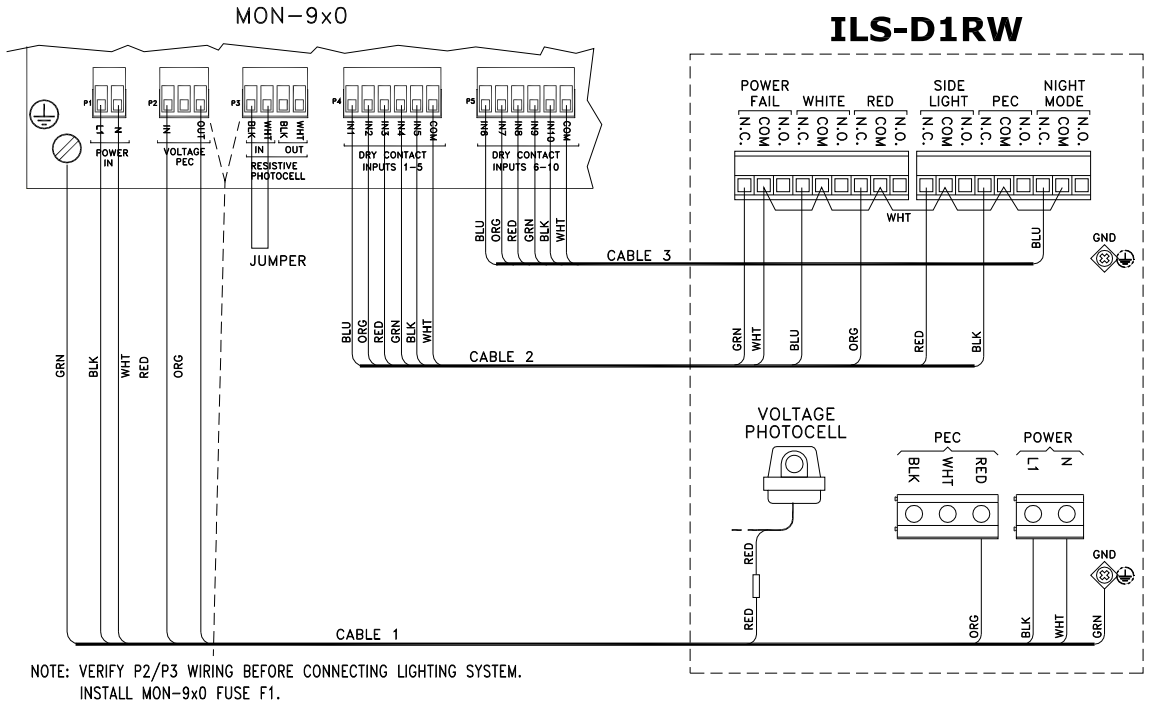

Figure 37: ILS-D1RW Wiring Diagram

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ILS-D1RW Triple Beacon Wiring Diagram

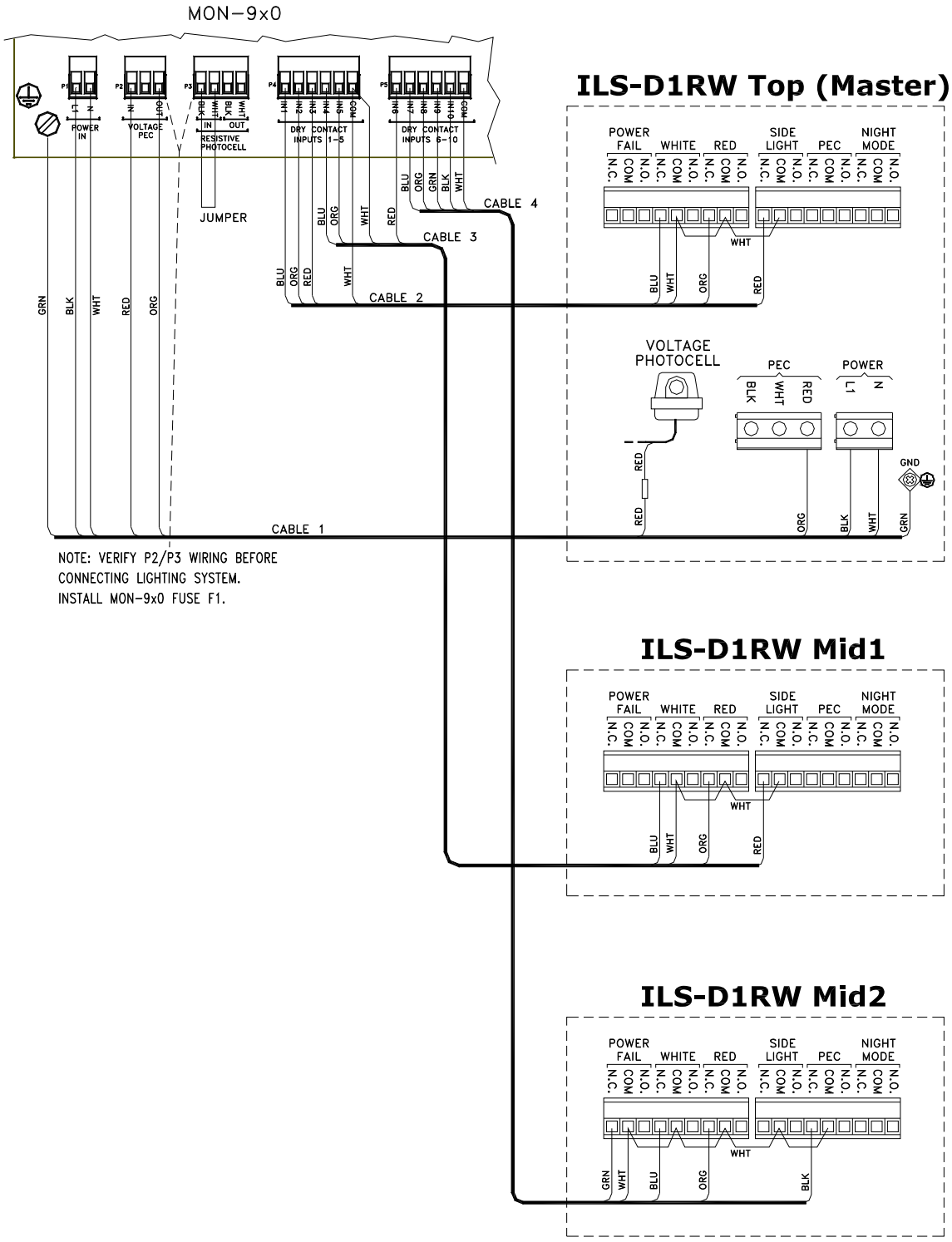

Figure 38: ILS-D1RW Triple Beacon Wiring Diagram

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ILS-3600-0IR/2600-0IR Wiring Diagram

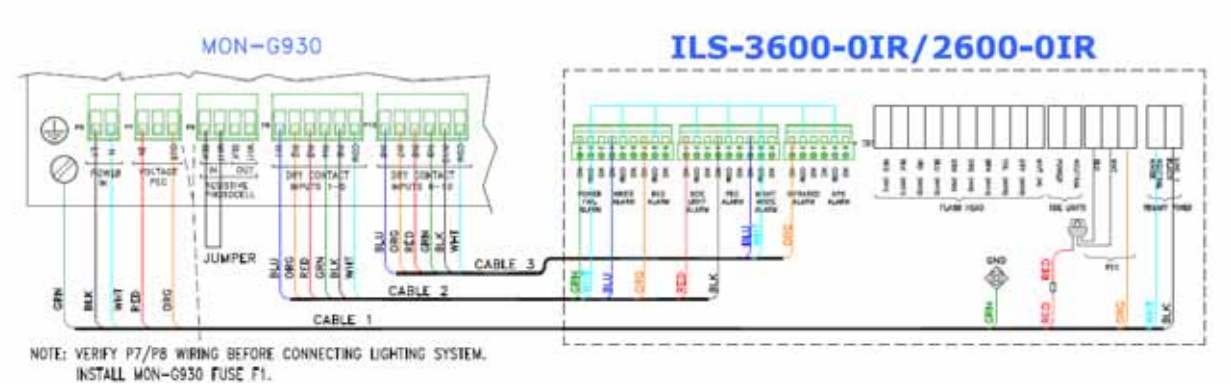

Figure 39: ILS-3600-0IR/2600-0IR Wiring Diagram

ILS-3600/2600 Wiring Diagram

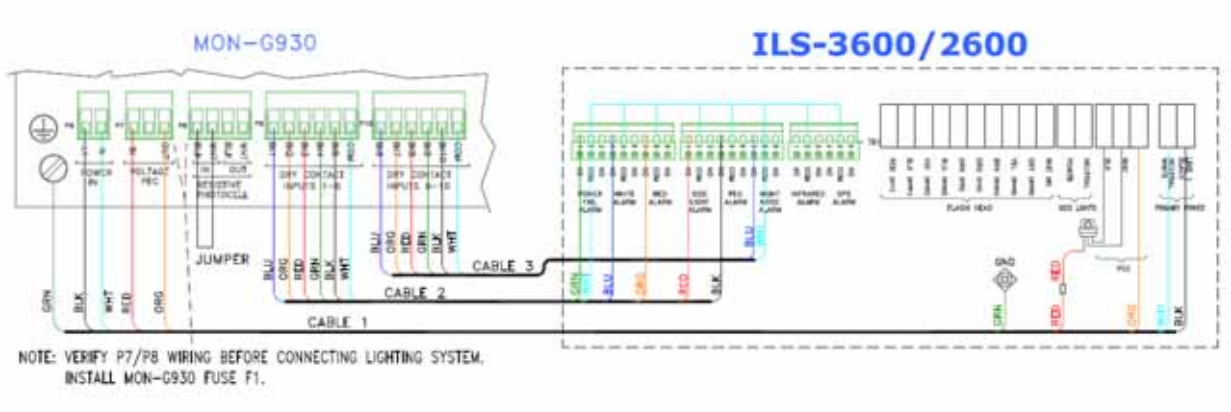

Figure 40: ILS-3600/2600 Wiring Diagram

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ILS-3600/2600 Triple Beacon Wiring Diagram

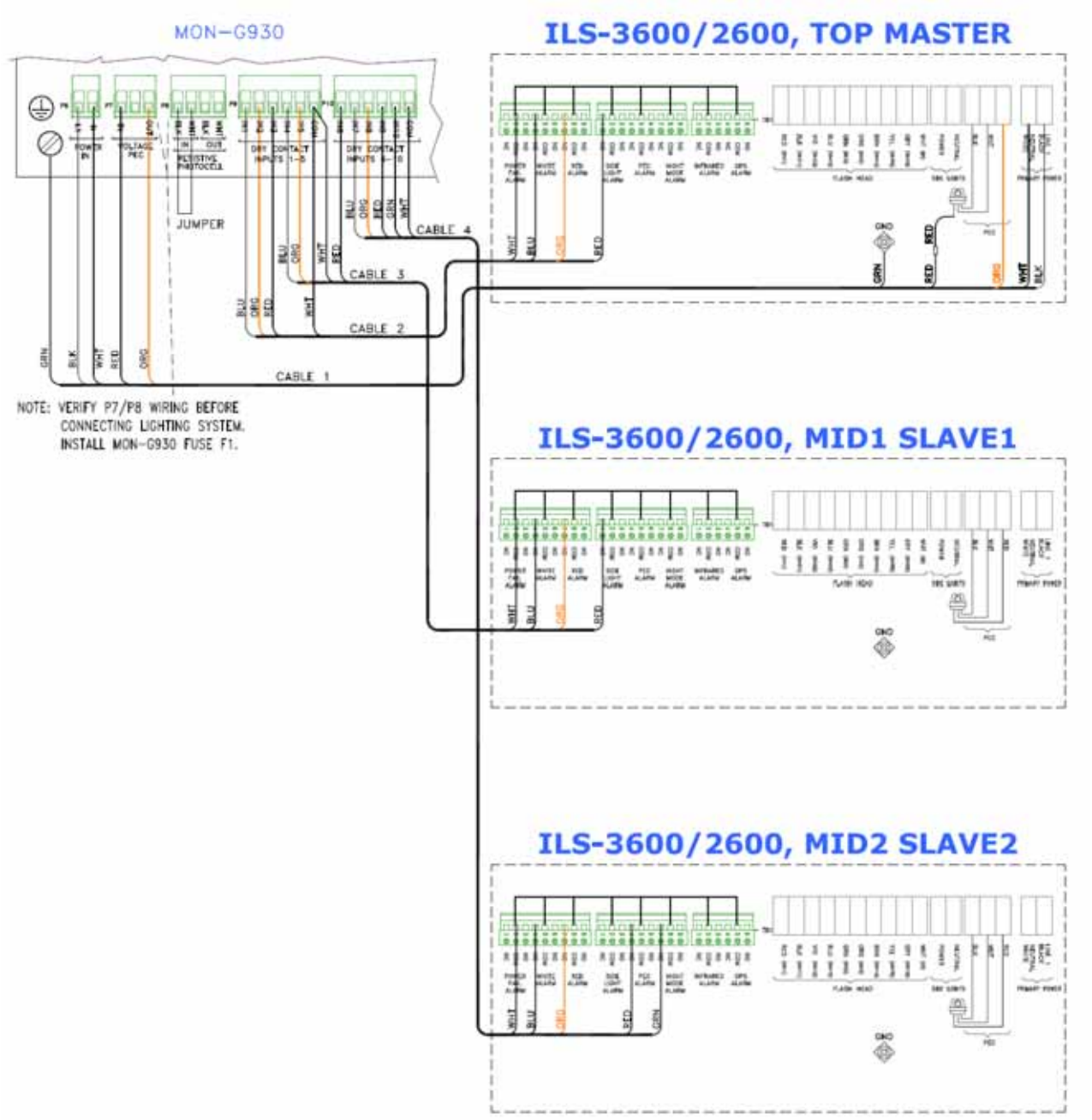

Figure 41: ILS-3600/2600 Triple Wiring Diagram

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RLC-200 Wiring Diagram

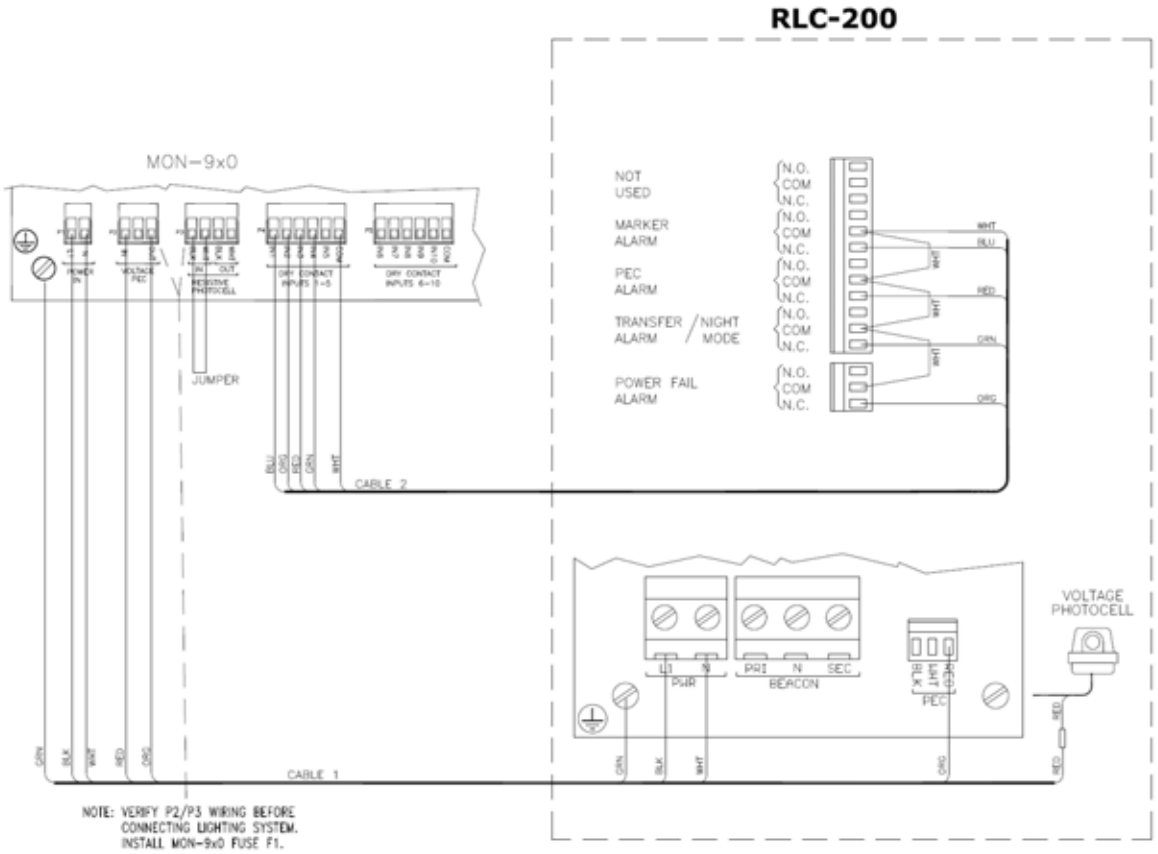

Figure 42: RLC-200 Wiring Diagram

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RLC-201 Wiring Diagram

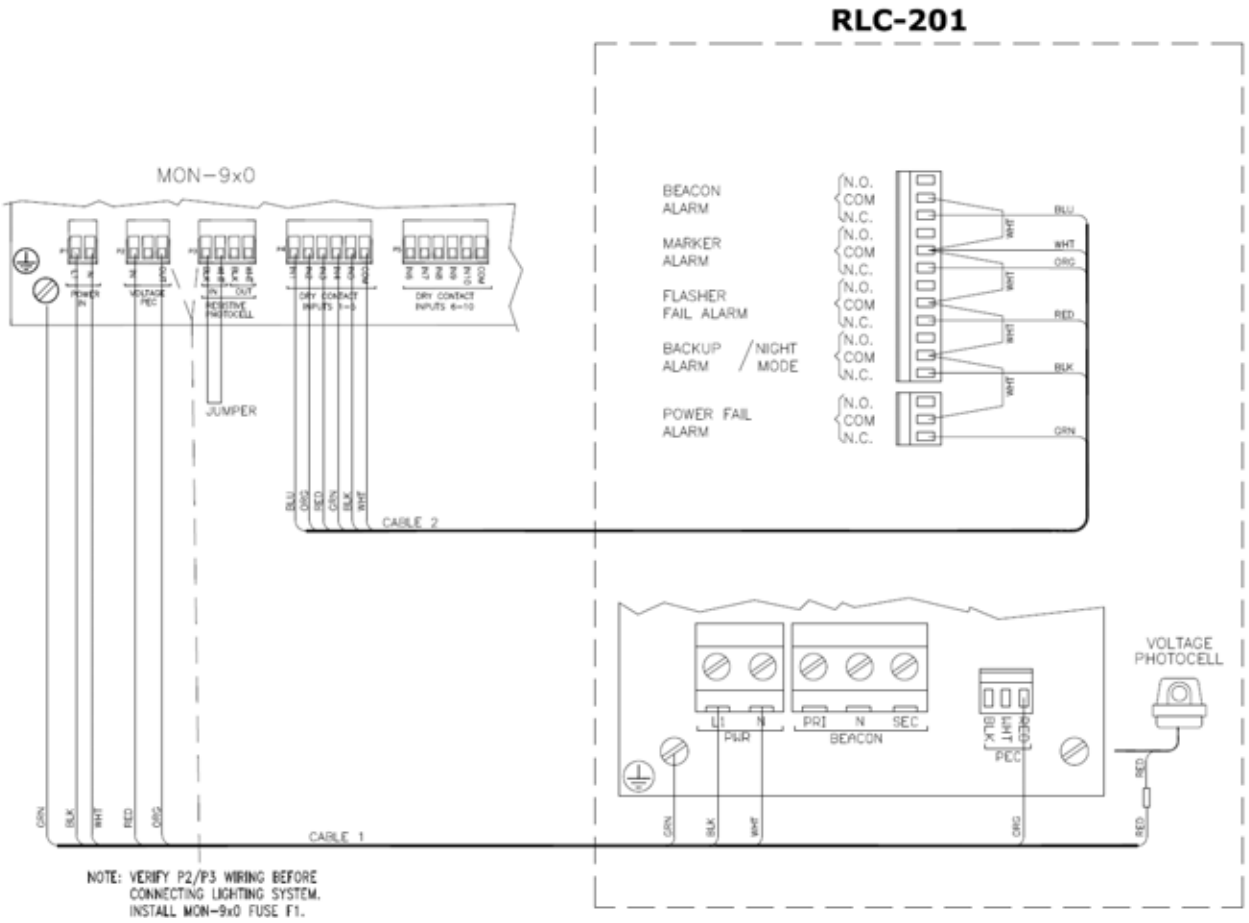

Figure 43: RLC-201 Wiring Diagram

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RLC-203 Wiring Diagram

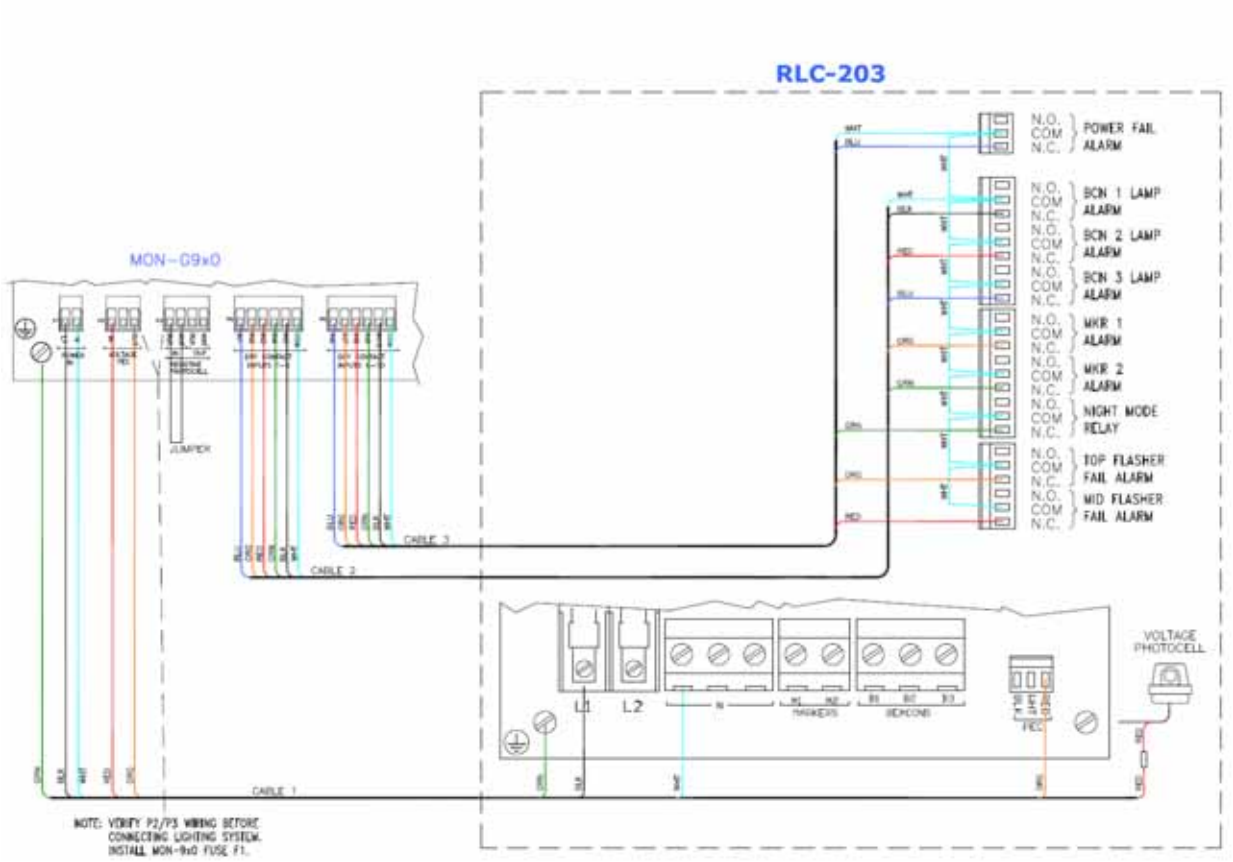

Figure 44: RLC-203 Wiring Diagram

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RLC-206 Wiring Diagram

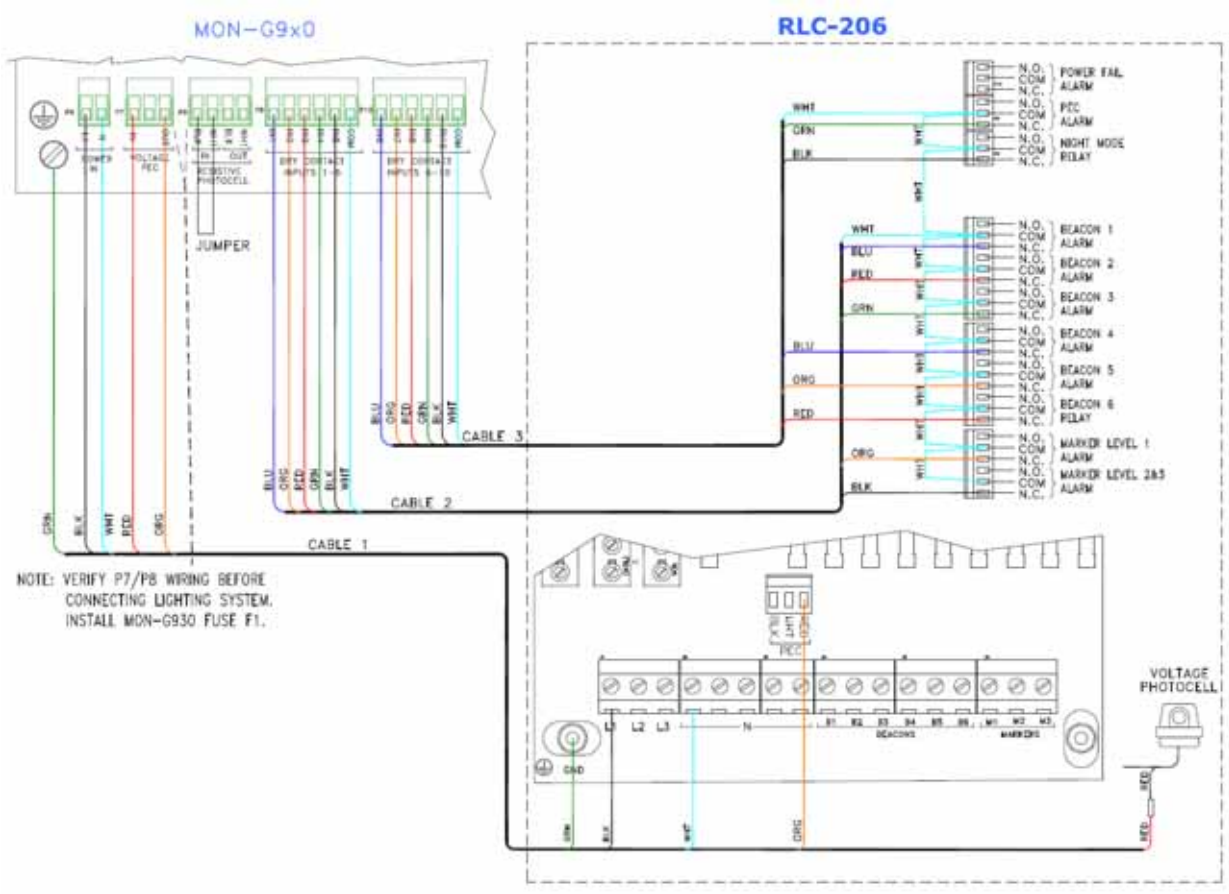

Figure 45: RLC-206 Wiring Diagram

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FTB-324/312/311/310 Wiring Diagram

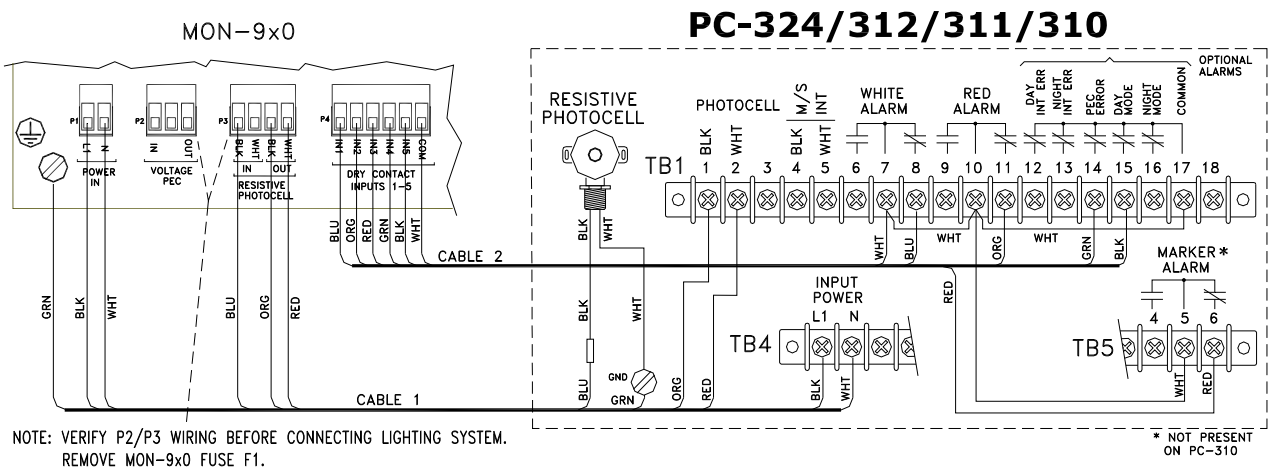

Figure 46: FTB-324/312/311/310 Wiring Diagram

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FTB-324/312/311 Triple Beacon Wiring Diagram

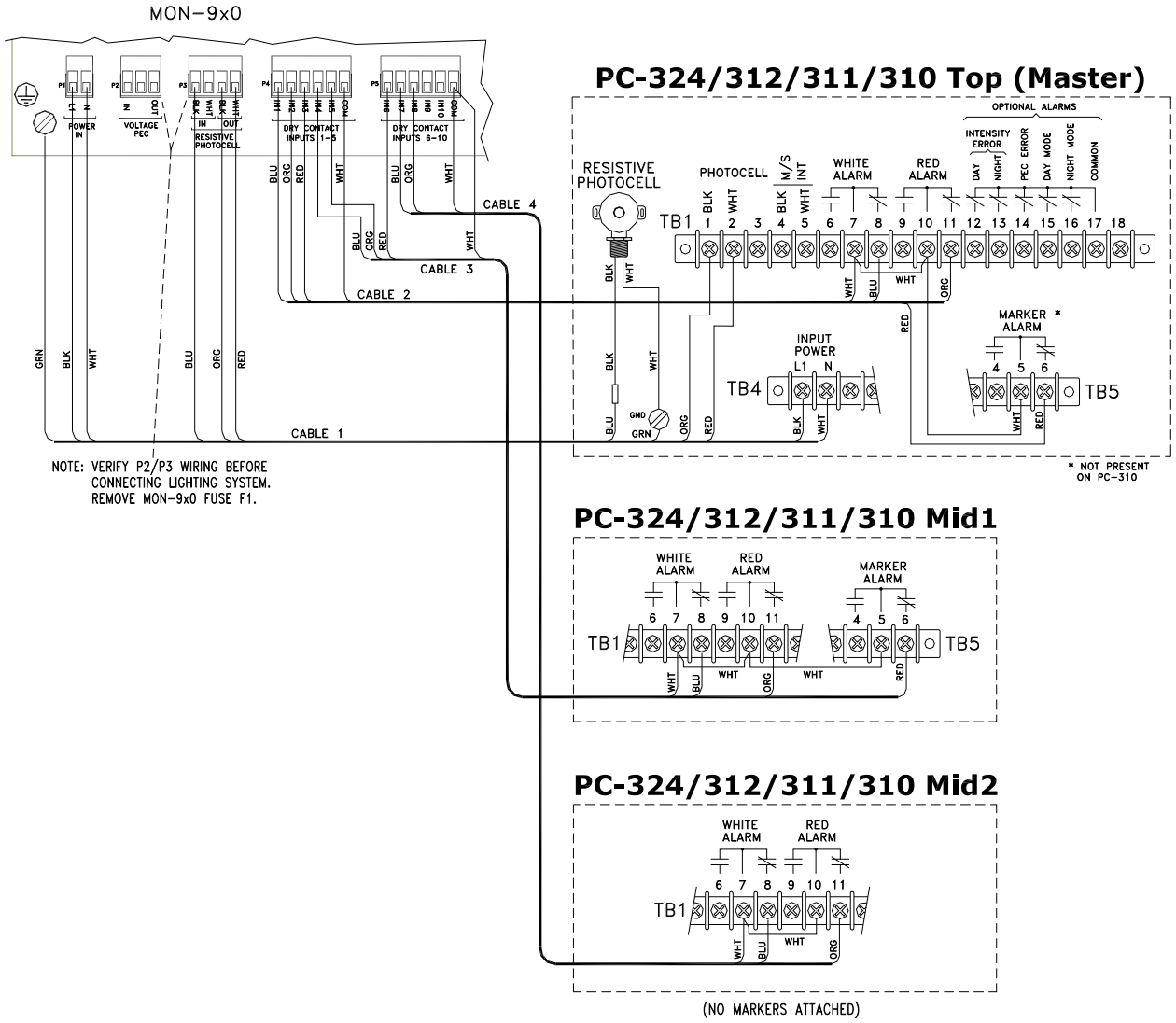

Figure 47: FTB-324/312/311 Triple Beacon Wiring Diagram

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FG-3000/3000B/2000/2000B Wiring Diagram

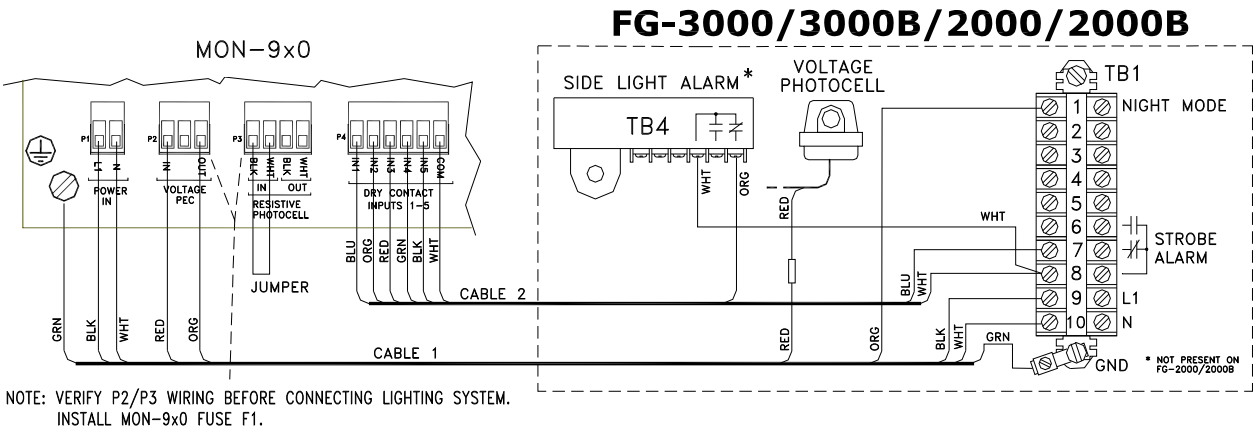

Figure 48: FG-3000/3000B/2000/2000B Wiring Diagram

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FG-3000B/3000 Triple Beacon Wiring Diagram

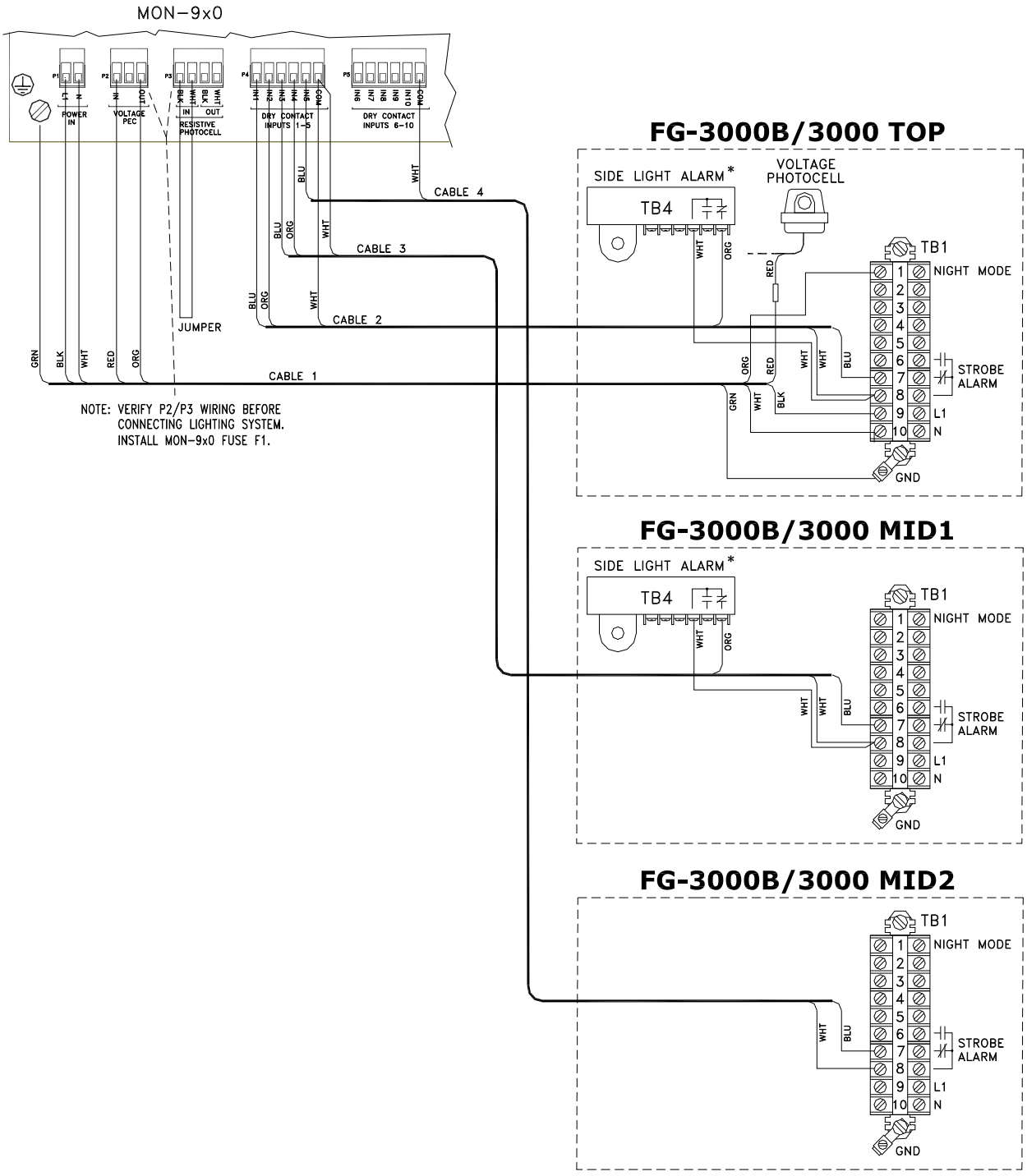

Figure 49: FG-3000B/3000 Triple Beacon Wiring Diagram

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FG-2000B/2000 Triple Beacon Wiring Diagram

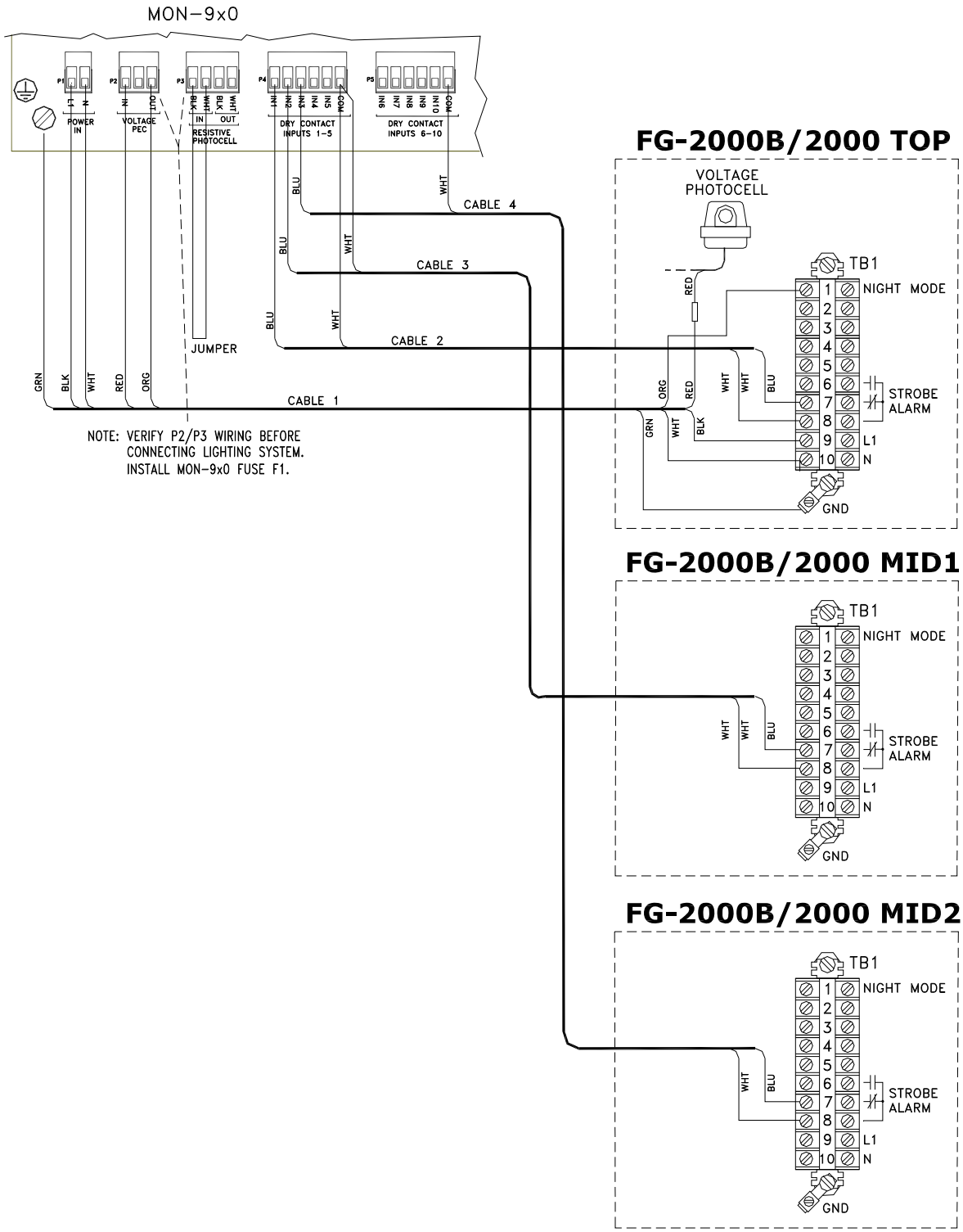

Figure 50: FG-2000B/2000 Triple Beacon Wiring Diagram

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FTS-3621 Wiring Diagram

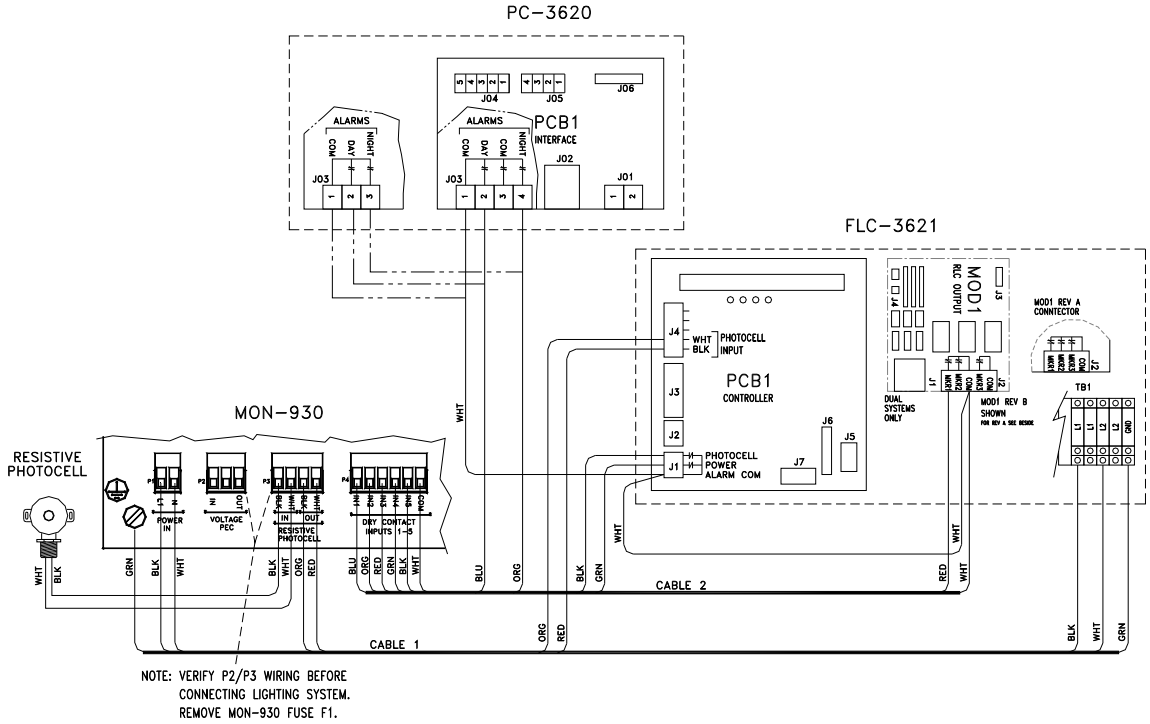

Figure 51: FTS-3621 Wiring Diagram

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E-1DB Wiring Diagram

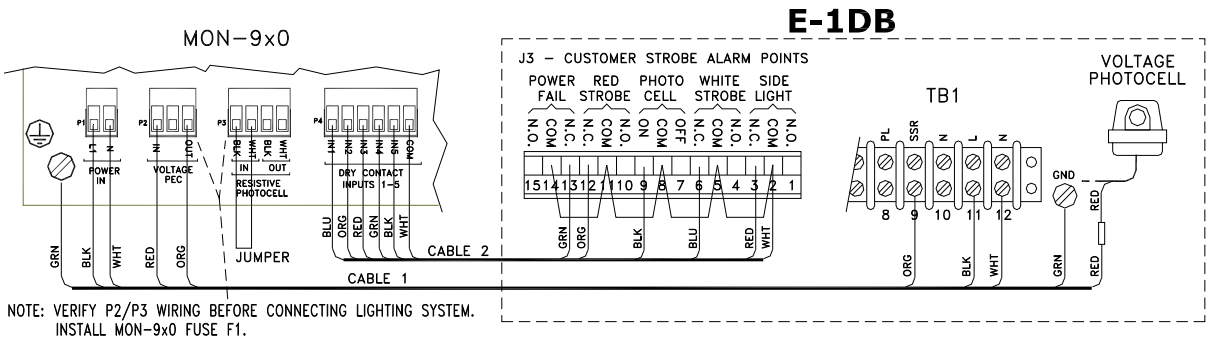

Figure 52: E1DB Wiring Diagram

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E-1DB2 Wiring Diagram

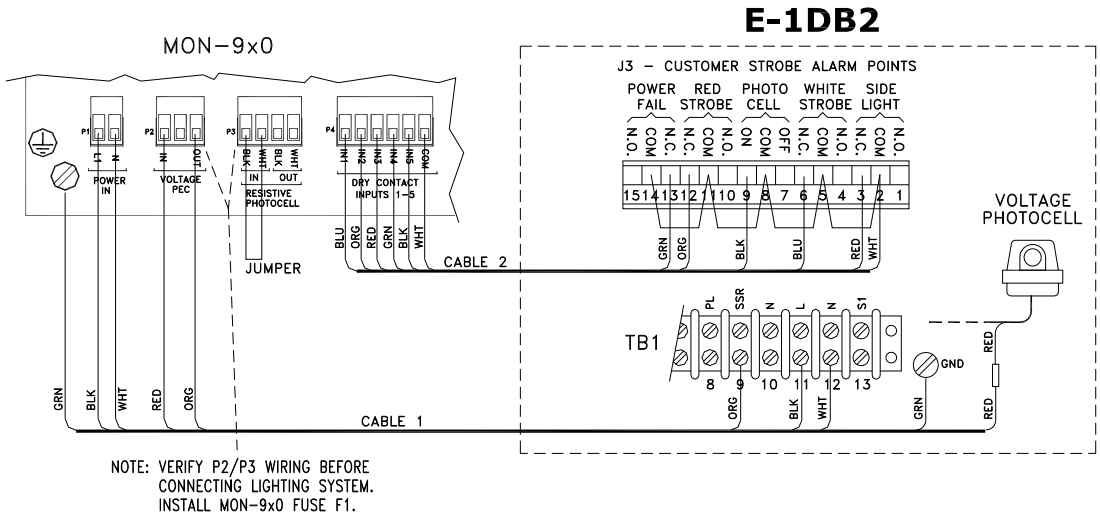

Figure 53: E1DB2 Wiring Diagram

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E-1DBSL Wiring Diagram

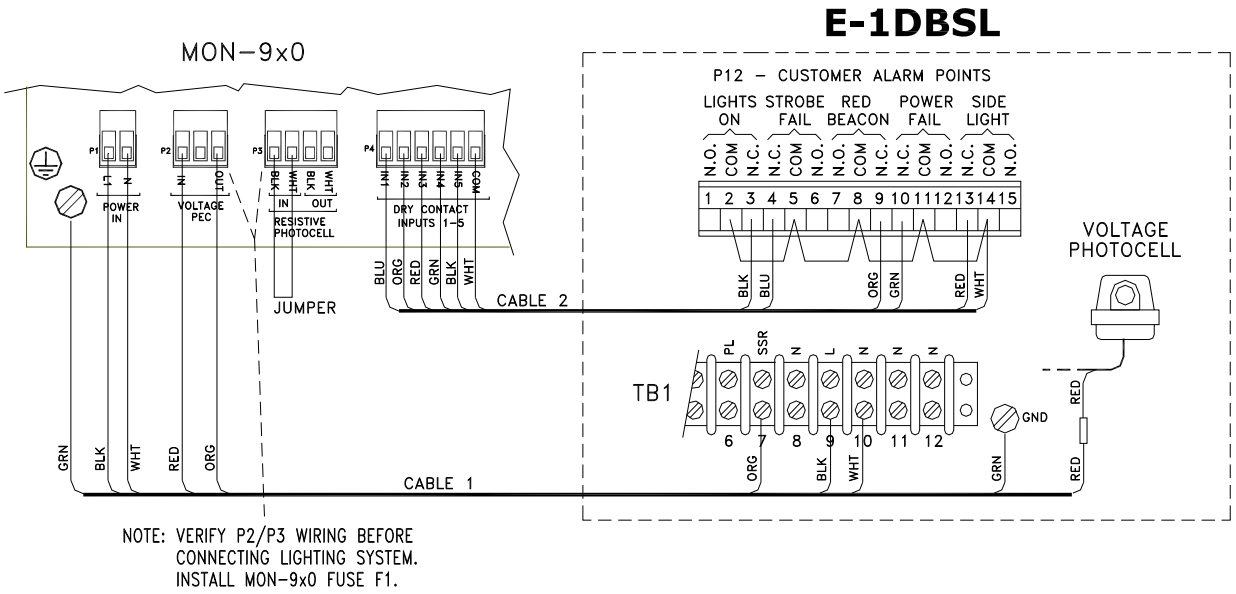
E-1DBSL
MON-9x0
P12 – CUSTOMER ALARM POINTS
LIGHTS ON
STROBE FAIL
RED BEACON
POWER FAIL
SIDE LIGHT
N.O. COM N.C. N.C. COM N.O. N.O. COM N.C. N.C. COM N.O. N.C. COM N.O.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
VOLTAGE PHOTOCELL
POWER IN
VOLTAGE PEC
IN OUT
RESISTIVE PHOTOCELL
DRY CONTACT INPUTS 1-5
JUMPER
CABLE 2
CABLE 1
TB1
PL SSR N L N N N
6 7 8 9 10 11 12
GND
GRN BLK WHT RED ORG
BLU ORG RED GRN BLK WHT
BLK BLU ORG GRN RED WHT
RED RED
NOTE: VERIFY P2/P3 WIRING BEFORE CONNECTING LIGHTING SYSTEM. INSTALL MON-9x0 FUSE F1.

Figure 54: E1DBSL Wiring Diagram

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DLS1-008R Wiring Diagram

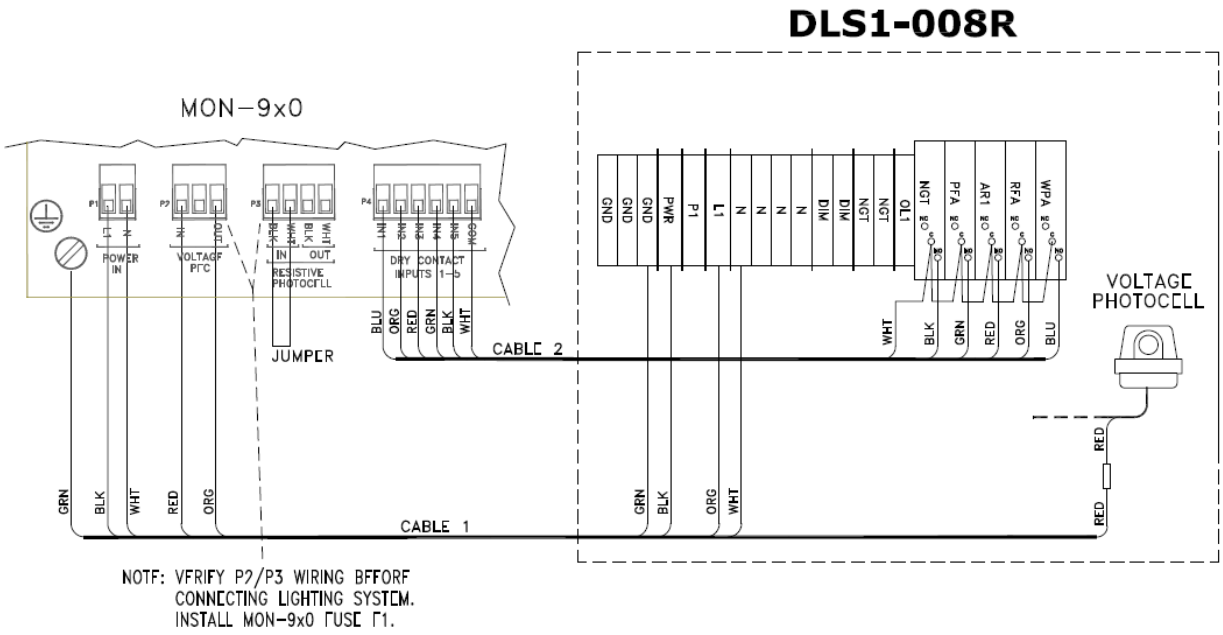

Figure 55: DLS1-008R Wiring Diagram

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D-1LVS Wiring Diagram

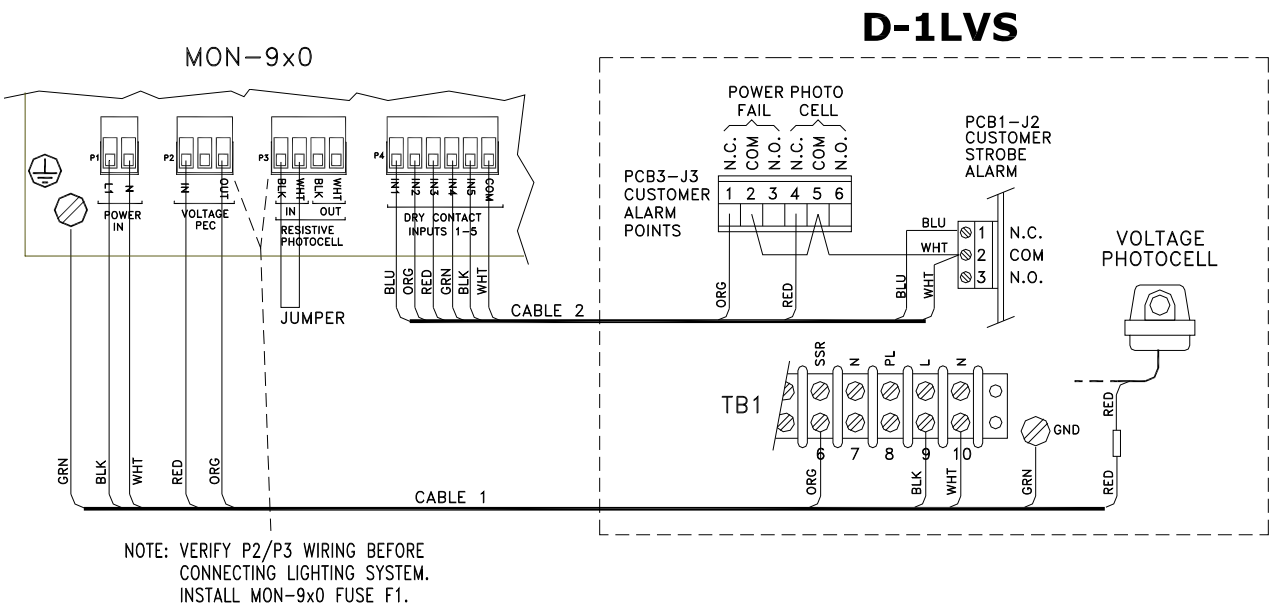

Figure 56: D-1LVS Wiring Diagram

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D-2/3LVS Wiring Diagram

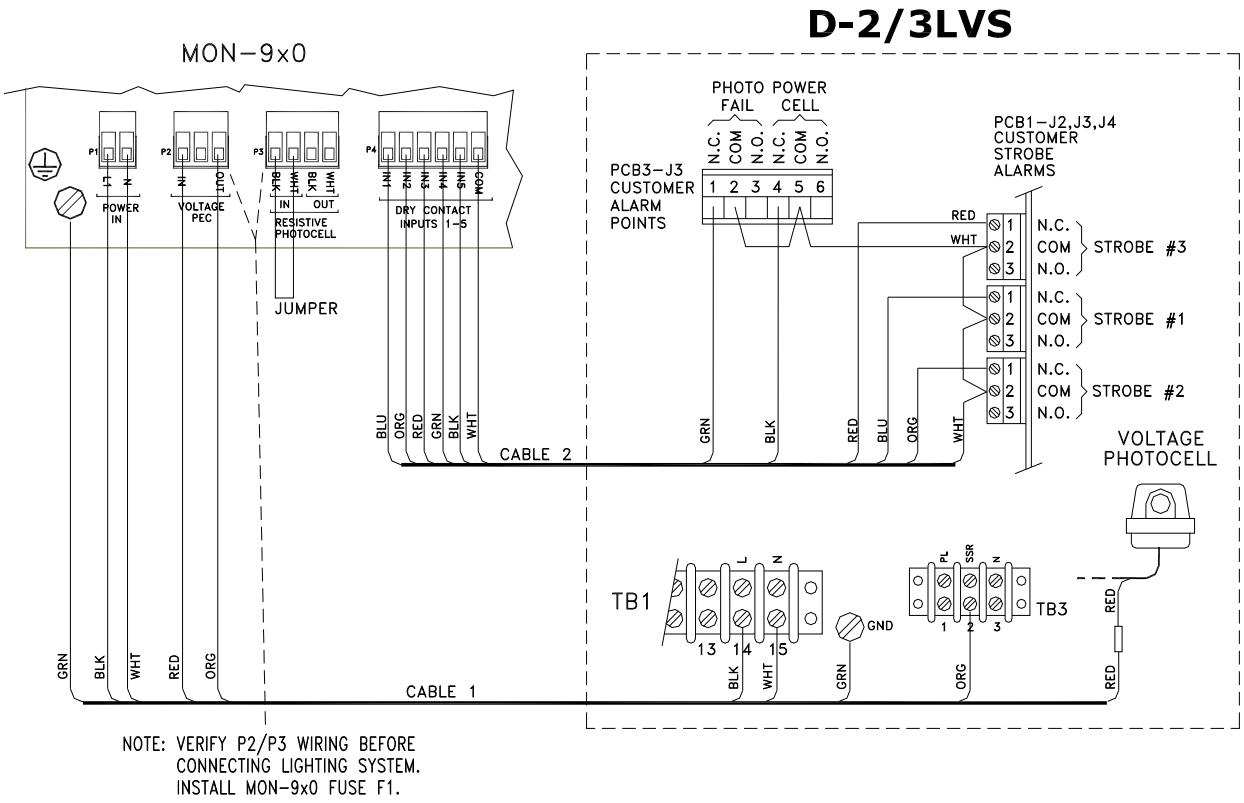

Figure 57: D-2/3LVS Wiring Diagram

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E-2/3DB Wiring Diagram

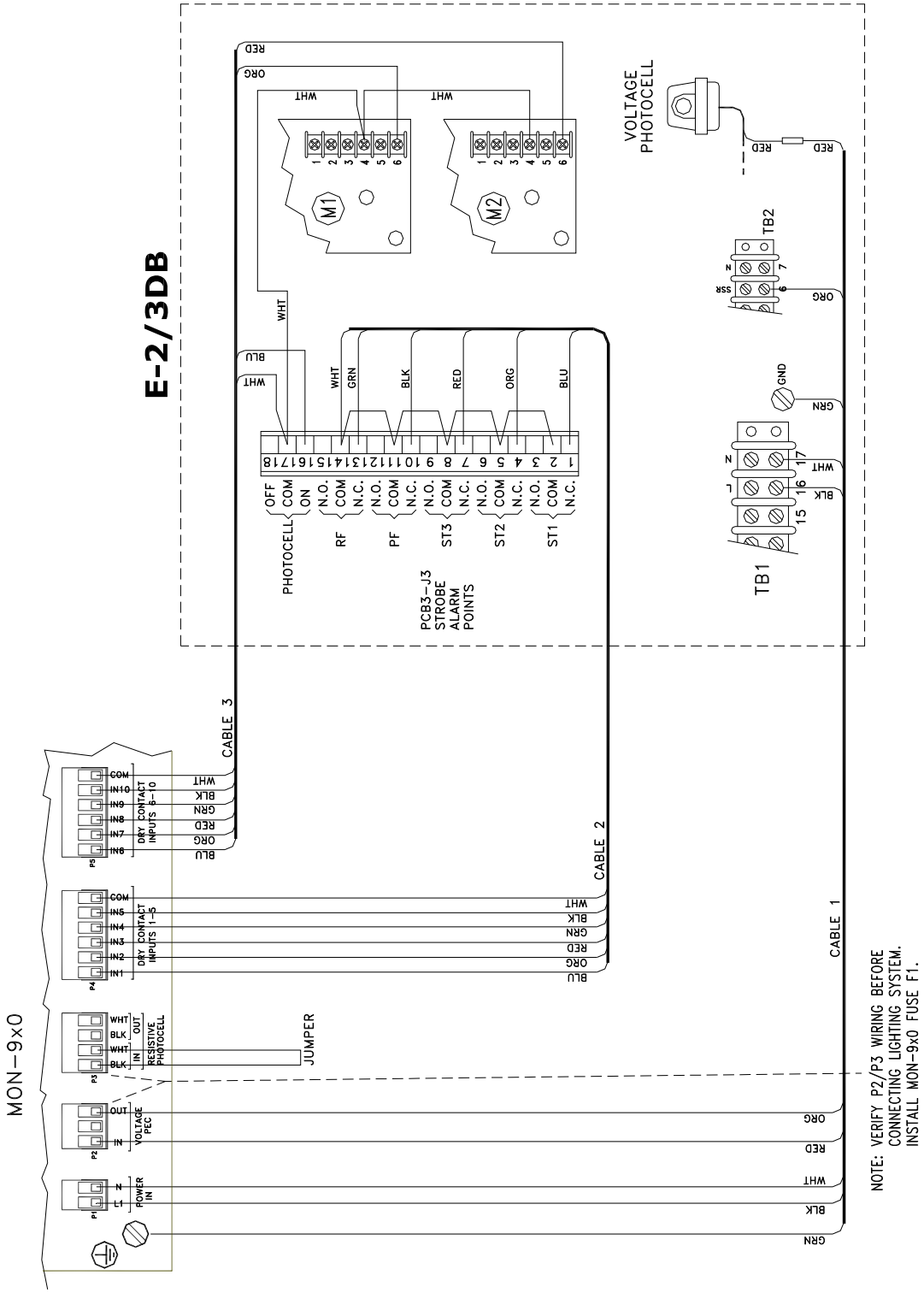

Figure 58: E-2/3DB Wiring Diagram

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E-2/3DBSL Wiring Diagram

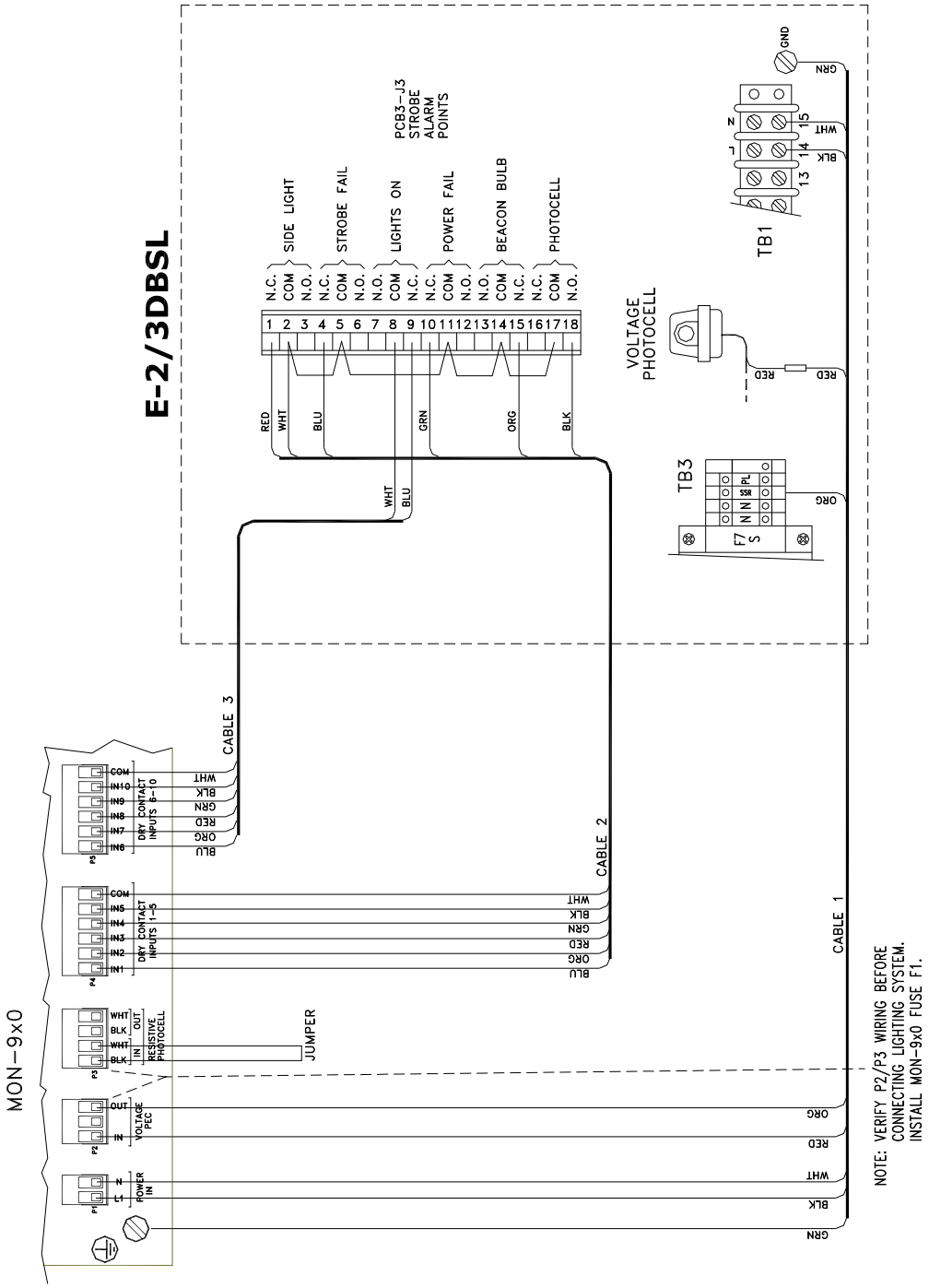

Figure 59: E-2/3DBSL Wiring Diagram

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AA0M-TSS Wiring Diagram

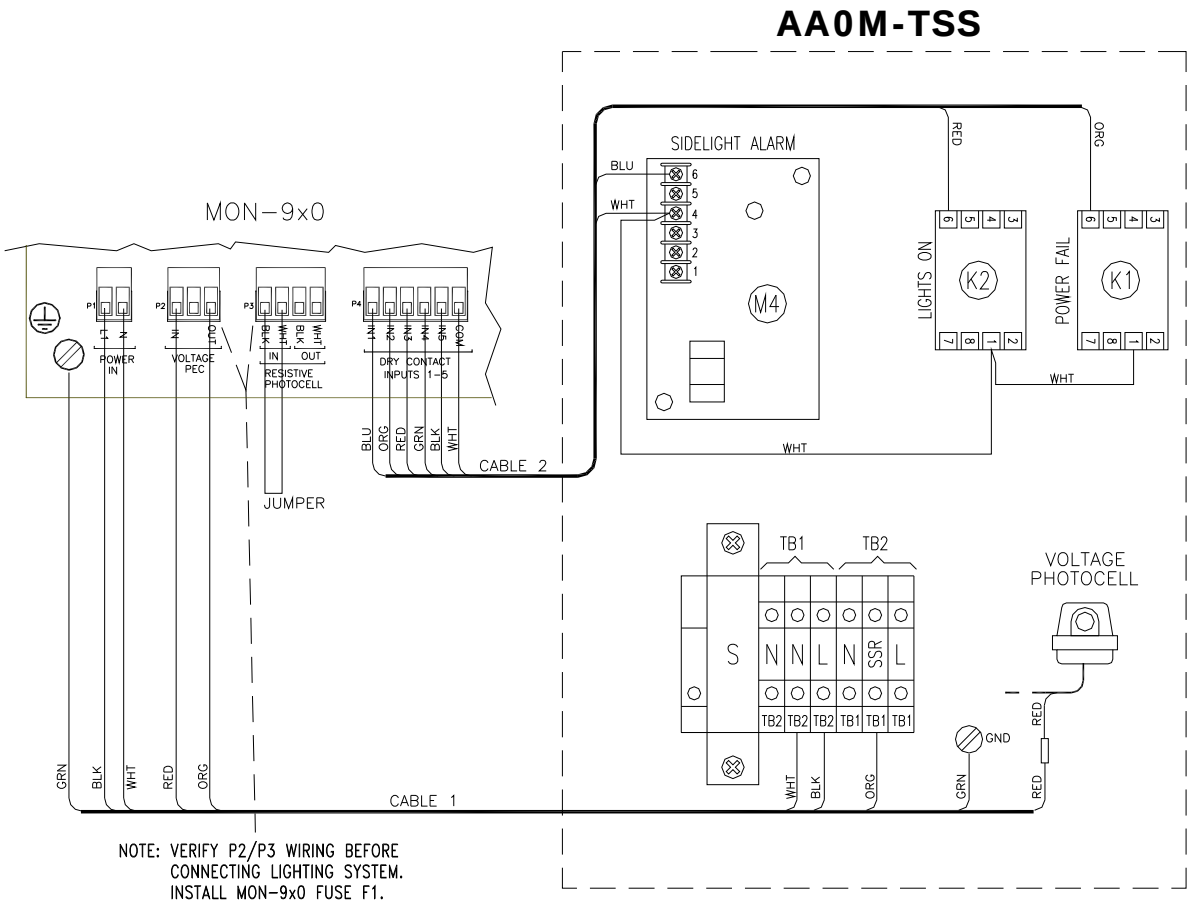

Figure 60: AA0M-TSS Wiring Diagram

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AA1-M Wiring Diagram

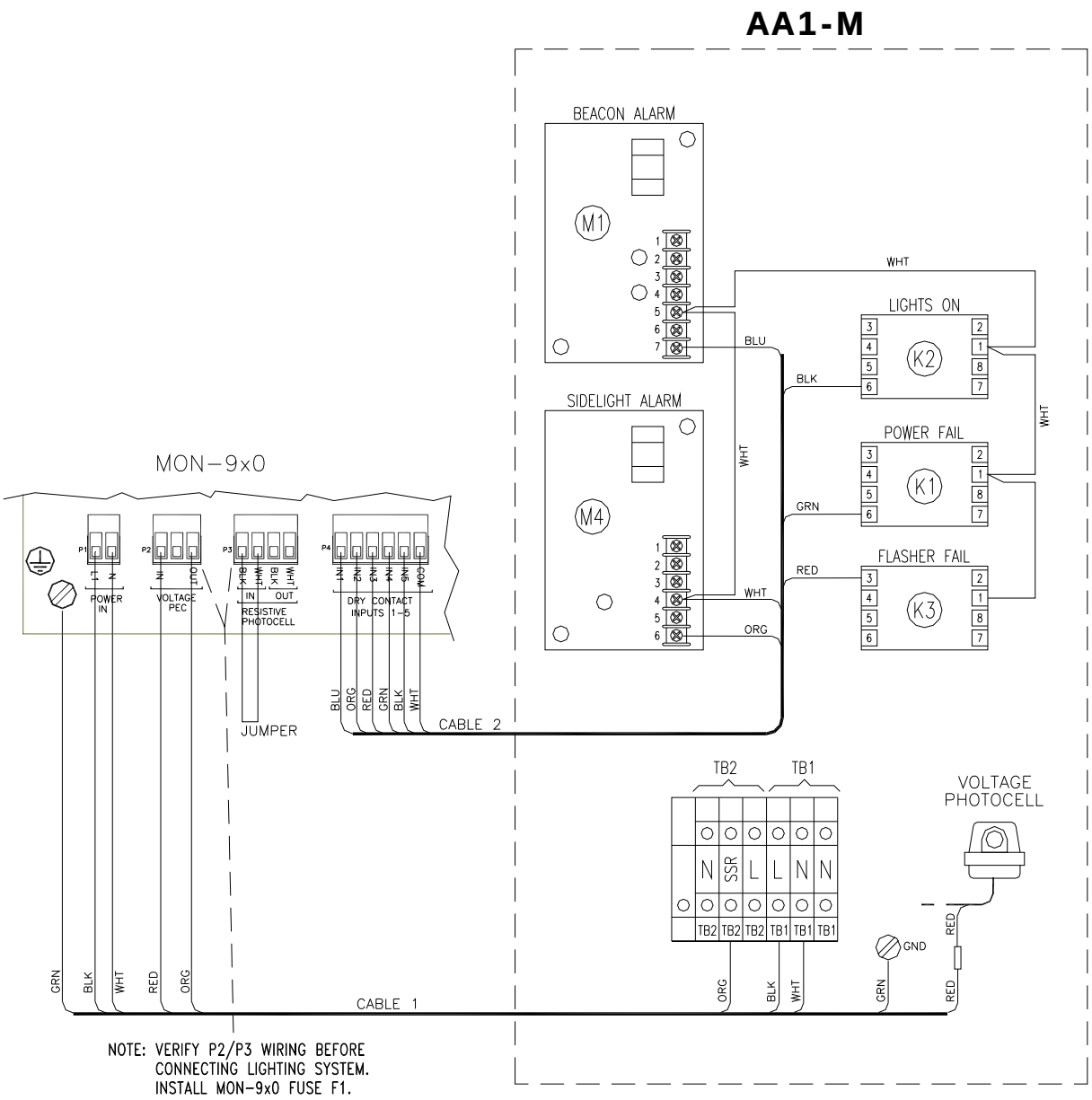

Figure 61: AA1-M Wiring Diagram

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Technical Support and Contact Info

Contact Info

For information on the ITL lighting systems' basic functions, refer to this manual and the accompanying drawings. For additional help with the installation or operation of any ITL products, please contact ITL, LLC at one of the following below.

Web and Internet Sites

Corporate home page: http://www.itl-llc.com

Monitoring System Info: http://www.itl-llc.com/monitoring-systems.html

Customer Support Technicians

8:00 AM - 5:00 PM Central Time

US and Canada call: +1-615-256-6030

Toll Free: +1-866-624-8309

Email: support@itl-llc.com

RMA

Please contact ITL, LLC before returning equipment for repair and obtain a Return Material Authorization (RMA) number.

Revision	Description of Change	Date	Preparer / Approval
5a	Updated cover sheet,	7/09/2012	Prepared By: Elke Hinson Approved By: Andy Rudolph
6	Add information for MON-G930, Add wiring diagram for DLS1-008R, update wiring diagram FTS-3621, ILS-3400 Triple & ILS-D1RW Triple	2/28/2013	Prepared By: Elke Hinson Approved By: Andy Rudolph
7	Added -24V model	9/9/2013	Prepared By: Joshua Crowne/ Elke Hinson Approved By: Andy Rudolph
8	Added wiring diagram for ILS-3600-0IR/2600-0IR, ILS-3600/2600, RLC-0200, RLC-0201, RLC-0203 & RLC-0206	7/23/2015	Prepared By: Elke Hinson Approved By: Andy Rudolph

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